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The Oldman River Dam

BUILDING A FUTURE FOR SOUTHERN ALBERTA





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BUILDING A FUTURE FOR SOUTHERN ALBERTA



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by the Honourable Ken Kowalski

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Preface

When the explorer John Palliser first saw the breadth and beauty of southern Alberta during the Palliser Expedition of 1857-60, he thought it unfit for human settlement. It was, he said, a desert. He saw the land and he saw the sun, but he did not see the requisite for life — human, wild or cultivated plant life — water. Water was and still is the key to survival in the south, a fact hard to recognize in the bountiful wet central and northern regions of the province. It was the key acknowledged by the first settlers, who began irrigation systems in 1897. It has been acknowledged by various Alberta governments since that time in their support for irrigation systems and, particularly, their understanding of the need for consistent and long-term water management.

A discussion about the need for the Oldman River Dam began in the twenties. The discussion began to be urgent when entire towns realized that they would have no room for growth, no place for their children, no secure future without a sure supply of water. The Oldman River is beautiful, can be bountiful and is the life's blood of the land it touches, but it is never sure. I have seen it thundering in the spring, only to walk in it no more than ankle deep in July. As a result of that experience, I have watched over the planning and building of the dam with a clear awareness of the necessity for building the dam.

At the same time, I constantly realized the need for an awareness of the kinds of impact on the environment that could occur from a project of this size. Historians and archaeologists were brought in to educate us all about the value of the land around the Oldman River. Scientists of every kind studied the effects on fish, plant life and wildlife. The most

comprehensive mitigation program ever was devised so as to enhance the area around the dam site and downriver, rather than have those areas diminished. It was a slow process, but a necessary one, and not one without difficulties. But with all the difficulties we faced, the vision of a steady flow of the Oldman River feeding the lands and people of the south kept the project on track.

I say we because so many people shared that vision, so many people shared in the difficulties and joys of building the dam, from engineers, contractors, laborers and equipment suppliers to the townspeople who came out to consult with us about what was best for them. That vision was also shared by the historians, archaeologists and mitigation planners and workers who guided us in preserving what we could of the past and in planning the best wildlife and fisheries habitat for the future. None of the people who worked on any area of the dam's planning and building came away without feeling that they had worked on something that counted a great deal to the people of the south and the people of Alberta. They came away dedicated to the vision of the south held by the people who lived there.

I take great pride, then, in writing the preface for this book, *The Oldman River Dam: Building a Future for Southern Alberta*. It is a brief history of the place of water in southern Alberta and of the resultant need for and building of the dam. It celebrates the accomplishment of the dedicated teams of workers in all imaginable areas, from concrete pourers to information officers. Finally, it becomes a historical record of the celebration of this great edifice, the Oldman River Dam, and its gift of life — of water — to southern Alberta.

Ken Kowalski
Minister
Public Works,
Supply and Services



I N T R O D U C T I O N

A Dam For All Seasons



For centuries, the Oldman River has been like a winding blue ribbon across the dryness of southern Alberta, softening the rugged countenance of mountains, foothills and semi-arid plains. For all its beauty, however, the Oldman has been capricious, alternately dazzling and disappointing those who depend on this mountain-fed river as their major source of water. Bountiful in spring, sparse and undependable in summer and autumn, the river's erratic flows have long been a concern to both urban and rural communities along its 443-kilometre course.

The Oldman River Dam, near Pincher Creek, now regulates the river's flow by capturing spring run-off in a large reservoir and releasing it during the traditionally dry months of summer and autumn. Several off-stream storage facilities and a refurbished irrigation system are in place to help southern Alberta farmers capitalize on this newly dependable resource. And throughout the Oldman River Basin, some one hundred and twenty-five thousand domestic, municipal and industrial users can now count on a consistent, high quality year-round water supply.

With its modern water-management system finally in place, southern Alberta looks to a new era of economic stability and growth. Local communities are confident it will be fueled by expanded irrigation, the ability to attract new industry and, in the area of the dam and reservoir, intriguing opportunities for water-based recreation and tourism.

The transformation has been neither swift nor simple. Altering the character of a centuries-old river is not a task to be undertaken lightly. From the outset, government decision-makers sensed there would be public concern. They recognized that turning a stretch of "natural" river into a storage reservoir — no matter how compelling the reasons —

would generate a certain amount of opposition and controversy. What no one could foresee was the scope and intensity of that controversy or the drama that would surround each step of development. Timing of the project was significant. Launched in the mid-1980s, in an era of mounting public concern with environmental issues and growing demand for public participation in resource-related decisions, the dam quickly caught the attention of environmental activists and assorted anti-dam lobbyists.



By late 1991, this relatively quiet rural scene along the Oldman River gave little hint of the building activity that dominated the site just months earlier. The result of two decades of planning and a six-year engineering and construction program, the dam and reservoir promise a new era of economic growth and expansion for the entire Oldman River basin.

Thousands of residents of water-short southern Alberta applauded the government's 1984 decision to proceed with a dam near the confluence of the Oldman, Crowsnest and Castle Rivers. After years of concern over uncertain water supplies, the dam promised dependable flows for agriculture, domestic and municipal use, industry, fisheries and recreation. In the view of a smaller but much more vocal group of opponents, however, the government announcement had clearly set the stage for failure. Convinced that the negative environmental impact of a dam and reservoir would far outweigh the social and economic benefits promised by the project, critics mounted an opposition campaign. Not surprisingly, it captured widespread media attention. To the dismay of those who saw a secure supply of water as the key to the region's social and economic future, opponents insisted the dam was neither needed nor wanted.

Government, too, recognized legitimate concerns related to on-stream storage of water. Planners worried about the disruption to the area residents whose farms and ranches would be lost to the reservoir. They were concerned with the potential loss of fish and wildlife habitat in the area of the dam and reservoir. But they were convinced that palatable solutions could be found. Among the answers were appropriate compensation for area landowners and one of the most comprehensive community-based environmental and social mitigation programs ever undertaken in Alberta.



For area residents and tourists who cherish scenes like this along the Oldman River and its foothills' tributaries, the loss of 43.2 kilometres of river flooded to accommodate the dam and reservoir was a matter of considerable concern. Through an ambitious mitigation program, however, government, community members, scientists and other professionals worked together to minimize the negative impact on the environment and capitalize on new opportunities for fisheries and wildlife habitat, recreation and tourism.



By 1987, with construction just beginning, the project was confronted with the first of a series of court challenges, many of them linked to emerging environmental laws and guidelines. As project developer, the Alberta government found itself caught up in a swirl of negative publicity. At the same time, dam proponents in general had to look at combatting a frustrating public perception. Despite ample evidence to the contrary, the Government of Alberta was widely viewed as having made a sudden, almost whimsical, decision to build the dam.

Curiously, outside southern Alberta, few observers appeared to notice that water-management options in the Oldman River basin had been the subject of almost two decades of intensive research, analysis and public input. The resulting “roomful” of reports and recommendations all told much the same story: without a major water-storage facility on the Oldman River, steadily increasing demand for water in southern Alberta would go unmet. The dam and reservoir were essential components of a strategy to safeguard the interests and prospects of future generations of Albertans.

While debate over the dam escalated in the media and in the courts, work at the site continued, providing employment and contracts for hundreds of area residents and businesses. By now, the cast of characters playing out



One of several mountain-bred river systems that drains into the plains of Western Canada, the Oldman River served for centuries as a natural transportation corridor and source of water, shelter and firewood for generations of Native people. Later, European traders and settlers would also be drawn to the beauty and protection of the river valley.



Even before completion of the dam and reservoir, thousands of people came to see the widely publicized Oldman River Dam project. What they witnessed was both a significant engineering accomplishment and a determined effort to make this man-made structure as unobtrusive as possible on the valley and prairie landscape. A favourite initial question, say tour guides, is a puzzled, “But, where’s the dam?”



At seventy-six metres, the Oldman River Dam is the fourth highest dam in the province. It took 8.2 million cubic metres of earth and rockfill to create the grass-covered wall that now stretches 3,070 metres across the river valley, about ten kilometres northeast of Pincher Creek. The total project cost \$353.3 million (1986 dollars), and the energies and expertise of close to five thousand people went into its completion.



It looks like the grand-daddy of all waterslides – but there is much more to this structure than fun and frolic. Operated from the nearby administration building, the electronically controlled gates of the concrete spillway determine both the amount and pattern of water flows surging down the converging chute. At the bottom of the spillway, a design feature called a flip-bucket dissipates the energy by plunging the water into a pool at its base – and in the process creates a spectacular fountain effect.

the drama was enormous. Politicians at every level, civil servants, engineers, contractors, irrigation farmers, lawyers and a host of local, national and international media observers and analysts played key roles. Area residents, including members of the Peigan Band from the nearby Brocket Reserve, had important parts in the drama. Environmental lobbyists, backed by high-profile entertainers and folk heroes, occupied centre stage, while in the background, fish and wildlife experts, historians and recreation planners were among the dozens of specialists recruited to implement mitigation plans.

Over the next three years, the dam and spillway steadily took shape. Under the watchful eye of a Local Advisory Committee established to safeguard local interests, new roads and bridges were developed in the area of the dam and environmental mitigation plans were vigorously pursued. During this period, a number of legal and technical challenges were satisfactorily answered — and at no time did the courts call for a halt to construction.

By 1991, it was clear that the investment of interest, energy and expertise by developers, consultants, community members and objective critics had been worthwhile. It had paid off in a project widely judged to be technically sound and socially acceptable. For those



Where the foothills of the Rocky Mountains provide a gentle transition between rough-hewn peaks and rolling prairie, mountain vegetation and biological systems overlap those of the plains to form a beautiful and highly diverse environment – home to hundreds of species of plant and animal life.



In the semi-arid landscape of southern Alberta, scenes like these would be few and far between without some judicious management of water resources. Today, roughly fifty major water bodies across the south have been turned into recreation sites. The water bodies were created for a variety of purposes, but each summer they draw thousands of area residents with a yen for boating, fishing, swimming and windsurfing.



Miles downstream of the Oldman River Dam, the impact of a newly dependable water flow is felt here – in the heart of irrigation country. Structures like this form part of the water lifeline across the south, a sophisticated water-resource system that feeds crops, supplies industry and carries drinking water to dozens of southern Alberta communities.

involved, the satisfaction came in the summer of 1991 as the reservoir began to fill (proving to more than one skeptical observer that it could, indeed, hold water). By 1992, the project was in full operation. Throughout southern Alberta, there was clearly a sense of satisfaction in having been part of one of the most important resource-enhancement projects every undertaken in the province. The dream of water security for southern Alberta had been realized.

Although opposition to the dam faded in the final months of construction, some opponents continue to argue that Albertans have paid too high a price to harness southern Alberta's limited water resources. In some quarters, concerns remain about the environmental and social impact of the dam and about actions of the Alberta government in pursuing the

project. Issues concerning the federal government's responsibility were brought before the Supreme Court of Canada. The decision of that court regarding environmental law and federal responsibilities related to major development projects may have implications for the future. In the meantime, the Government of Alberta believes history will prove its decision to build the Oldman River Dam was a sound one. Despite the tough and often politically unpopular decisions required in the planning, siting and construction of the project, provincial politicians are convinced that it is the key component in a water-management strategy that will serve the southern part of the province well into the twenty-first century.

Significantly, some who once opposed the dam now share a more optimistic vision of the future for southern Alberta. Aggressive measures to mitigate against the negative impact of the dam have calmed fears of environmental and social degradation.

This is the story of the Oldman River Dam — why it was needed, how it was built and what it will mean to the future of southern Alberta and to the province as a whole. It is a continuing story. Completion of the dam, spillway, reservoir and associated recreation facilities — on time and within budget — marked a significant milestone in the Oldman River Dam saga. But it is not the final chapter. The story will continue in ongoing government and community programs to monitor fish and wildlife populations in the reservoir area and to ensure the healthy growth of shelterbelts and wildlife habitat. It will continue in the completion of the planned interpretive centre, in the development of new recreation activities on the reservoir and river and in new blocks of irrigated land along the Oldman's course. Finally, future chapters of the Oldman River Dam story will almost certainly chronicle a new era of growth and opportunity throughout southern Alberta.



The Oldman River and its tributaries – the north fork of the Oldman, the Castle and the Crowsnest – all lead to mountain passes. Along the eastern parts of these ancient travel routes, the people of the tribes of the Blackfoot Confederacy moved from summer journeys to the security of their valley wintering grounds. From the west, the rivers and passes also brought visitors, including the Kootenai Indians of the British Columbia interior, who made regular trips to the plains to hunt buffalo. Above: Astokumi and his wife (Sarcee) about 1887.

ONE

The Land of The Oldman



In the clear, dry air of southern Alberta, even a modest vantage point affords spectacular long-distance views. To the west, the scene is of clean-etched mountains towering above gently swelling foothills. To the east, prairie grassland, like a great swatch of caramel-coloured velvet, gives way to the mottled green patchwork of one of Canada's largest concentrations of irrigated farms.

Linking these two vistas is a venerable river, its course carved through mountains and plains well before the last ice-age. Known as the Oldman River (historians trace the name to Blackfoot and Cree words for "Old Man's Playground"), the waterway has influenced patterns of settlement in the south and helped shape the social and economic fabric of this semi-arid region. Long before Europeans settled in this area, generations of Indians of the Blackfoot Confederacy found hospitable hunting and wintering grounds in the land of the Oldman. The happy combination of mild weather, river and prairie drew the great herds of buffalo that sustained the Indians. In 1874, the North West Mounted Police established their presence on an island in the Oldman River, setting the stage for the modern-day town of Fort Macleod and opening the way to peaceful settlement by homesteaders from Europe.

Today, agriculture, oil and gas activity and tourism are major contributors to southern Alberta's economy. Forestry plays a role in foothills communities. Together, they have spurred development along the Oldman — from Pincher Creek, a major service centre in the western foothills, to Lethbridge on the central plains. A city of sixty thousand in the heart of irrigation country, Lethbridge is home to the University of Lethbridge.



Buffalo herds thundered across the plains of southern Alberta as late as the nineteenth century, providing a vast storehouse of food for Indians who camped along the Oldman River. The buffalo, too, sought shelter in the foothills' river valleys in winter, when frequent chinooks melted snow on their grazing lands above the valleys. For travelling artists, Native hunters and stampeding buffalo were favourite subjects.

In a transition from frontier wilderness to modern economic community, the Oldman River has continued to dominate both the life and the landscape of the region. From its source — an alpine lake on Mount Lyall in the Rocky Mountains — the river flows south, then east across the prairie to join the Bow River near Grassy Lake. Together, they become the South Saskatchewan River. As part of the Saskatchewan-Nelson River system, the waters of the Oldman eventually make their way to Hudson Bay.

In its 443-kilometre journey across southern Alberta, the river flows downhill through a tree-lined channel, its rocky bed dipping from an elevation of three thousand metres at the Alberta-British Columbia border to less than seven hundred metres near Lethbridge on the central plains. The steep descent encourages spectacular flows in May and June and contributes to dramatic seasonal fluctuations.

Until the Oldman River Dam and reservoir were established on the main stream of the river in 1991, 60 per cent of this exuberant springtime flow quickly disappeared, leaving little water to meet the peak demands of municipalities and irrigation districts from July to October.

Gathering spring meltwaters from the mountains, the Oldman has traditionally rushed through The Gap, a spectacular valley in the Livingstone Range of the Rockies, then hurtled across the plains in the space of six to eight weeks. Adding to this brief rush of water were the Oldman's main tributaries — the Crowsnest and Castle rivers, Willow Creek and the Belly, St. Mary and Little Bow rivers. In all, the Oldman Basin drains an area of more than twenty-seven thousand



By the late 1800s, Pincher Creek was already a centre of prairie commerce. Here, Stoney Indians trade at the Hudson's Bay Company Store. Today, with a population of close to four thousand, Pincher Creek has become one of the major service centres in southwestern Alberta.



Peaceful settlement of the west was due in large measure to the presence of Canada's world-famous Mounties. The first Alberta detachment of the North West Mounted Police established its headquarters by the Oldman River at Fort Macleod. Today, at the Fort Macleod Museum, tourists thrill to a colourful re-enactment of life at the fort more than a century ago.

square kilometres and serves about one hundred and twenty-five thousand people.

There are other reasons why the Oldman has traditionally been a poor water-provider throughout most of the year. In an area where annual precipitation rarely tops three hundred and fifty millimetres (compared to about six hundred millimetres in the northern part of the province), the Oldman River and its tributaries are not likely to be rejuvenated by heavy summer rains. As well, long hours of sunshine and warm dry winds funnelling through the mountains virtually suck up excess moisture from both land and waterways.

This combination of climate, geography and geology has had a profound effect on the economy of southern Alberta. It has encouraged the growth of irrigation farming, a development that has turned some 1.3 million acres of near desert in southern Alberta into lush, productive farmland. It has forced centres such as Lethbridge, Fort Macleod and Picture Butte to keep a close watch on municipal water consumption. To a large degree, it has limited opportunities for further industrial growth throughout the region.

Perhaps more than anything else, uncertainty over water supply has led southern Albertans to view each river and stream as a precious lifeline. In few areas of Canada do residents place so much importance on water and on water-



The brief but rowdy era of the Whiskey Traders, who came north to trade with the Indians of Canada's southern Plains, is relived near Lethbridge in this re-creation of Fort Whoop-up on the banks of the Oldman River.



Designed to hug the coulees above the Oldman River, this striking, clean-lined structure houses the University of Lethbridge.



Still a familiar sight in southwestern Alberta, the working cowboy knows well the pleasures of life in foothills country. Ranching remains an important contributor to the southern Alberta economy.



Less than an hour's drive from the Oldman River Dam lies the spectacular Waterton Lakes National Park. Dominating the townsite is the venerable Prince of Wales Hotel.

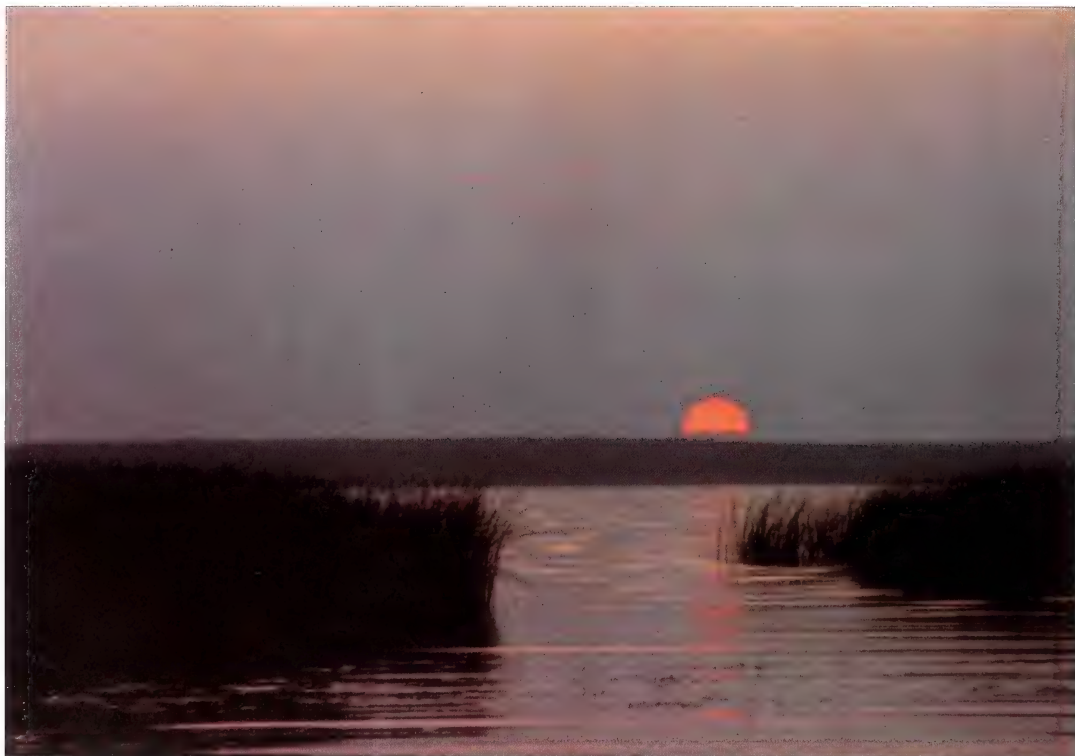


At Head-Smashed-In Buffalo Jump, eighteen kilometres northwest of Fort Macleod, visitors to southwestern Alberta learn more about the magnificent beasts that once roamed the "Land of the Oldman." Designated a World Heritage Site in 1981, Head-Smashed-In was being used as a buffalo kill site more than five hundred years before the first pyramid was built in Egypt.

management developments designed to maximize the benefits of a relatively scarce resource.

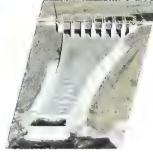
Don LeBaron, a Lethbridge businessman, alderman and long-time proponent of the Oldman River Dam project, explains southern Albertans' emotional attachment to water: "It's difficult for anyone who has never lived in a drought-prone area or who has never seen the economic spin-offs from irrigation to understand how we feel in the south about wise water management. People elsewhere simply can't appreciate what a desert we would live in without a comprehensive water-management system."

Over the years, government planners have had another reason to be concerned about the flow of the Oldman. Under the Master Agreement on Apportionment, Alberta is committed to making sure that half the natural flow of the South Saskatchewan River system passes into Saskatchewan each year. In fact, because of a lack of water-storage facilities, Alberta has in most years far exceeded its commitment — with roughly 83 per cent of the water in the South Saskatchewan crossing the interprovincial boundary. With the Oldman River Dam, the province will be able to meet its apportionment obligations, while ensuring that more of Alberta's share of the water benefits Albertans.



TWO

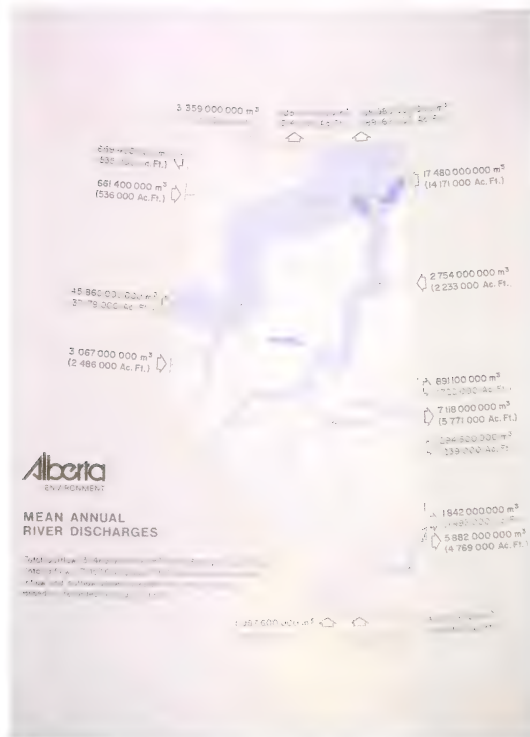
The Magic of Water



If water were the sole magnet to settlement, population distribution in Alberta would present a much different picture. No longer would major development and urbanization be concentrated in a band across the southern and central parts of the province. In the north, the Peace-Athabasca River drainage basin, which accounts for almost 90 per cent of the province's surface water, would surely claim the bulk of Alberta's roughly two and a half million people. Farther south, the Saskatchewan River Basin would be unlikely to house 80 per cent of the provincial population, becoming instead a sparsely populated reflection of Alberta's north country.

The reality is that across the southern part of the Prairie Provinces, four and a half million people inhabit the Saskatchewan-Nelson drainage basin, an area that accounts for only 12 per cent of Western Canada's freshwater resources. The Oldman River Basin is part of that system. To a distant observer, this imbalance between water supply and prime population growth areas must seem a curious anomaly. Could it be the result of some perverse plan to add challenge to life in Western Canada? Did early settlers somehow fail to grasp reality? What led to this apparent miscalculation of the water supply and water demand equation?

Albertans have long had the answer. It lies in the compelling lure of sunshine and soils, in the temperate climate, warm winds and vast open plains of southern Alberta. Together, these attributes add up to spectacular agricultural potential. Early ranchers and farmers considered it a potential worth exploring. And if water supplies constituted the one uncertain ingredient in this mix of natural bounty, they reasoned that something would clearly have to be done to give nature a hand.



Man would have to supply the moisture that nature withheld.

In the north, dams would be built to prevent flooding. In the south, where the problem was more likely to be drought than flood, the goal was to store water captured during high run-off periods and release it later to ensure a dependable year-round water supply. The south is not without its share of waterways. The Red Deer, Bow, Oldman, South Saskatchewan, St. Mary, Belly and Waterton rivers and their tributaries slice through some of Canada's most arid landscape. But, as southern Alberta pioneers quickly learned, dramatic variations in flow from season to season had a negative impact on the growing environment and threatened to limit both the economic and social growth of the region. Successive governments, both federal and provincial, have shared southern Alberta's concerns over water. Today, the needs of the region figure prominently in a provincial water-management philosophy that views this vital resource as both a prerequisite to balanced economic growth and a common heritage to be used carefully and efficiently.

Despite a generally good overall supply of quality water, Alberta faces the problem of making sure the water is in the right place, in the right amount, at the right time. Water quality is also a major consideration. Among

hundreds of water-management projects throughout the province, the Brazeau Dam and reservoir, on the Brazeau River which feeds the North Saskatchewan, ensures a dependable water supply for the city of Edmonton. A dam on the Paddle River controls the floods that once plagued communities northwest of Edmonton, regularly decimating farms and damaging land. Seven hydroelectric dams and water-management structures maintain flows on the Bow River, enabling Calgary to meet municipal demands while the Dickson Dam has turned the Red Deer River into a dependable supplier of water to a large area of south-central Alberta. Nowhere are Alberta's water-management programs more visible, however, than in southern Alberta. Here, practising sound water-management has meant building a series of dams, weirs and off-stream storage reservoirs that divert and impound water from streams and rivers and has meant investing in an elaborate network of irrigation headworks and canals used by close to six thousand irrigation producers.

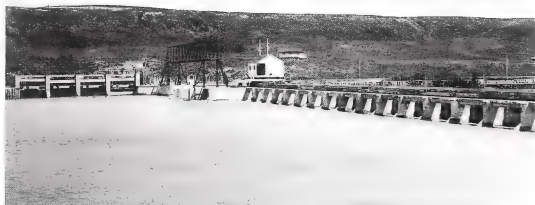
Water-resource planning in Alberta is organized on a river basin basis and built around the concept of multi-purpose use. The major authority is the Water Resources Act, which establishes water rights and preferential use. In Alberta, domestic and municipal uses of water are given top priority. Food production is considered next in importance,



Despite its limited and often undependable water supply, southern Alberta held enormous attraction for early settlers. Often from countries where agricultural land was at a premium, the newcomers envisioned cultivated fields on the shortgrass prairie and great herds of cattle on the plains and foothills rangeland. Scenes like these around Pincher Creek attest to the wisdom of their vision.

followed by industrial, recreation and other uses. Fortunately, as anyone who has witnessed fishing on Keho Lake, an off-stream storage reservoir, or enjoyed the summer beaches and sparkling waters of Forty Mile Coulee (another link in the south's irrigation system) can attest, Albertans take the multi-use concept seriously. Indeed, without southern Alberta's roughly forty-five man-made lakes, residents admit that a day at the beach would be a rare and time-consuming venture. As just one example of the popularity of these multi-use oases, Park Lake near Lethbridge annually draws thousands of day-use visitors. Only Sylvan Lake near Red Deer is a more popular day-use playground.

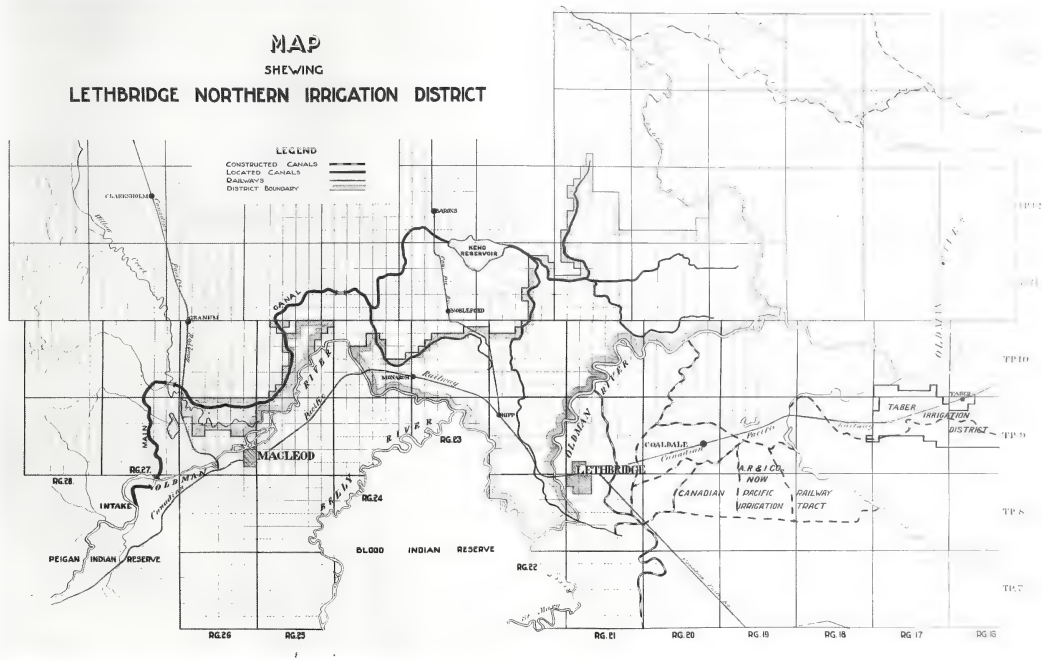
The multi-purpose use of water is also reflected in irrigation systems throughout the south that regularly deliver domestic, municipal and industrial water supplies to fifty smaller communities within the irrigation districts. In towns and villages from Strathmore to Taber, Foremost to Picture Butte, more than fifty thousand community residents count on the system to supply them with water for household use and to maintain their yards and gardens throughout the summer. Elsewhere throughout the Oldman River basin, another seventy-five thousand people look to the Oldman River and its tributaries to satisfy their water needs. The City of Lethbridge and communities such



As part of its campaign to lure settlers to the dry southern prairies, the Canadian Pacific Railway became one of the first players in what was to become a thriving irrigation industry in Alberta. As early as 1909, the CPR operated this diversion weir and headworks on the Bow River at Calgary.



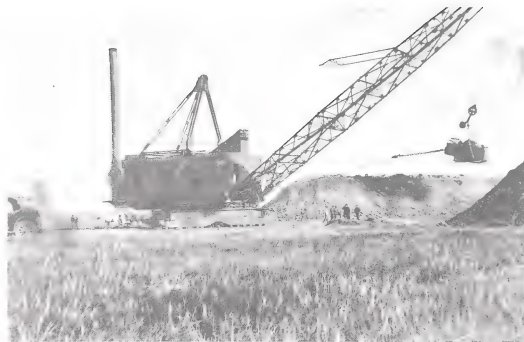
As settlers poured into southern Alberta in the early part of this century, demand for a reliable water supply continued to grow. The main canal at the Bassano Dam site, shown here under construction in 1909, would become a major link in the system that today serves the Eastern Irrigation District surrounding Brooks.



Although the Lethbridge Northern Irrigation District would not be officially formed until 1919, this early map shows planning well under way prior to that time, with boundaries defined and canal routes specified. The first settlers simply diverted water from small streams to water their crops. From 1915, many small, farmer owned-and-operated projects were established under the supervision and authority of the provincial government. Following the Second World War, the provincial and federal governments assumed responsibility for building new irrigation projects and expanding and maintaining existing systems. Since the late 1960s, the Alberta government, working in co-operation with the irrigation districts, has played a major role in rehabilitation and expansion programs. Map circa 1910.

as Fort Macleod and Taber take their water directly from the river. The Oldman River Dam, a key step in southern Alberta's lengthy journey toward a dependable and stable water supply, is also a multi-purpose project. It is designed to meet both municipal and agricultural needs while creating new opportunities for recreation and improved fisheries downstream. A measure of flood control and the potential for hydro-electric development have also been built into the complex.

Today's sophisticated water-management regime in the south began close to a century ago. In fact, Canada's irrigation industry began in southern Alberta. Followers of the Mormon Church, accustomed to the irrigation practices used in the Salt Lake City region of Utah, brought the technology north at a time when the region still formed part of the North West Territories. The first recorded irrigation began on Fish Creek south of Calgary in 1897, setting the stage for an Alberta irrigation industry that today encompasses more than three-quarters of all irrigated land in Canada. By 1903, the Canadian Pacific Railway was on the scene. It established the Calgary weir in 1903 — the first step in a concerted effort to persuade potential settlers to bypass the fertile lands of Manitoba in favour of the dry southern plains farther west.



By 1921, machinery like this was a common sight in the south as canals were cut from the dry prairie fields. When the Lethbridge Northern Irrigation District system began operating in 1924, twenty-two thousand dryland acres were transformed into lush and productive land.



Van Buskery's Grader Horsepower was in strong demand in the south during the 1920s as outfits like this one dug a water lifeline that would eventually link Lethbridge area farmers to the Oldman River. Here, Van Buskery's grader and crew tackled the challenges of heavy construction – 1920s style.



In this 1920 scene, staff of the Experimental Station, Lethbridge, demonstrate the value of irrigation on station grounds.



The headworks and diversion channel for the Lethbridge Northern Irrigation District are located on the Oldman River at the Peigan Reserve, downstream from the Oldman River Dam. From here, water travels across the south by pipeline and canal – eventually reaching the Lethbridge area some sixty-five kilometres to the east.

Gradually, bits and pieces were added to a system that now irrigates more than a million acres of southern Alberta. The Carseland weir on the Bow River east of Calgary was established in 1909. Today it supplies the Bow River Irrigation District. The Bassano Dam, also on the Bow, followed in 1910. It serves the Eastern Irrigation District surrounding Brooks. The impact of this activity was not lost on landowners in the Lethbridge area. By 1910, the move was on to establish an irrigation system to service an area to the west and north of Lethbridge, known as Coyote Flats. Much study and deliberation went into finding a water source for the area. The final decision was to build a weir on the Peigan Reserve west of Lethbridge to divert water from the Oldman River. From there, a series of flumes, syphons and canals would carry the water some sixty-five kilometres east to the Lethbridge area.

By 1919, the Lethbridge Northern Irrigation District (LNID) was formed. Authorized by the provincial government to divert two hundred thousand acre feet of water annually to irrigate up to one hundred and five thousand acres, the district swung into action in 1924 with a modest program that saw flows from the Oldman breathe new life into twenty-two thousand dryland acres. The LNID provides water to over one hundred twenty thousand acres — and with the 1992 completion of the Oldman River Dam

and reservoir promising a reliable year-round water supply, another fifty thousand acres in the Lethbridge area are earmarked for irrigation. In all, the dam and reservoir will create the potential for an additional one hundred seventy thousand irrigated acres throughout the basin. According to economic studies cited by government in 1988, this growth in irrigation will translate into one thousand seven hundred new jobs and forty-two million dollars worth of new agricultural production.

By late 1991, farmers in the Summerview area immediately northeast of the Oldman River Dam were exploring the possibility of creating irrigation on six thousand five hundred acres of land (total water allocation for the area will cover fifteen thousand acres). "This is an extremely dry area and always a tough place to make a living," explains Tom Ferguson, reeve of the Municipal District of Pincher Creek. "We have formed a society, and we're getting into the final stages of engineering to see if it's feasible to irrigate this land," he adds. Water to irrigate another fifteen thousand acres has been allocated to the Peigan Band on the nearby Brocket Reserve, while farther east, in the Barons district near Kehoe Lake, farmers are banding together to re-establish an irrigation district that had been abandoned.

Pincher Creek MLA Fred Bradley has pointed out that interest in further irrigation in the south has been overwhelming. "Farmers have expressed an interest in irrigating at least another five hundred thousand acres. Demand has been roughly three times as great as the water supply available, even with the Oldman River Dam in place."

The LNID is just one of thirteen irrigation districts throughout the south — ten of which lie entirely or partially within the Oldman River basin. Fed from reservoirs created by projects such as the St. Mary's Dam, the Waterton Dam and Forty Mile Coulee, the districts support a multi-billion-dollar agricultural industry that accounts for more than 20 per cent of the value of provincial agricultural output — from a mere 4 per cent of Alberta's arable farm land.

Today, the sophisticated sprinkler units that have largely replaced gravity feed irrigation systems provide virtually 100 per cent coverage of irrigated parcels. Rolling smoothly through manicured fields, these mobile fountains coax bountiful crops of soft wheat, barley, hay, sugar beets, mustard, canola, peas, beans, potatoes, corn and more — from a land once described as "an arid desert." Captain John Palliser, an Irish adventurer, made the now-famous assessment more than 130 years ago on an expedition through southern Canada. Were he alive today, he would undoubtedly be amazed to see developments in his Palliser Triangle — an area stretching across the prairies and dipping south of the Canada-United States border.

Irrigation has also contributed to an intensive livestock industry in southern Alberta. In the Lethbridge area alone, dairy cattle contribute over twenty million dollars annually to the economy while the yearly turnover in feeder cattle is close to three hundred fifty thousand. During debate over the Oldman River Dam project, LNID President Roy Jensen, an irrigation farmer in the Shaughnessy area near Lethbridge, repeatedly explained the impact of irrigation on Alberta's agriculture industry as a whole: "The irrigation districts are now feeding hundreds of thousands of cattle that would otherwise have gone to Ontario or the United States. This means purchasing feeders and extra feed grain from all over Alberta. That in itself has increased the price of barley by 20 to 25 per cent. The irrigation districts have also created a market for grass and alfalfa seed produced by other farms in Alberta. We re-seed alfalfa every five years and that means buying high quality seed from areas such as Peace River." A major crop on the south's irrigated parcels, he said, is soft white spring wheat. Unlike the hard red wheat produced by dryland farmers, this alternative crop is slated for use in pastry and pasta flour rather than bread. Grown nowhere else in the province, it has helped diversify Alberta's agricultural markets.

Among the most devoted and vocal proponents of the Oldman River Dam, Jensen made dozens of formal



Gravity-feed irrigation was used to irrigate this Strathmore area crop in the early 1920s. Once considered by some observers to be an arid desert unfit to grow crops, southern Alberta now has productive agricultural land, due in large measure to irrigation.



Today, sophisticated sprinkler units have largely replaced the gravity feed approach to irrigation in southern Alberta. From barley to beans, sugar beets to canola, irrigated crops make a major contribution to the value of Alberta's agricultural output.



Roy Jensen, a Shaughnessy-area farmer and president of the Lethbridge Northern Irrigation District, campaigned vigorously in support of the Oldman River Dam project: "We had strong support from both farm and urban communities throughout the south."

speeches and informal pitches on behalf the Oldman River Dam project during the 1980s — not always to sympathetic audiences. He recalled later, "Opponents saw this as pushing narrow vested interests, and they made their point with the media. Unfortunately, the people who saw the value of an integrated long-term water-management strategy for southern Alberta and for the province as a whole weren't speaking out. We knew we had strong support from both farm and urban communities throughout the south, but they weren't being vocal."

Jensen approached local politicians in Lethbridge and other jurisdictions throughout the region and enlisted the support of chambers of commerce and University of Lethbridge scientists, encouraging them to add their voice to the campaign for stability of water supply in the south. Construction of the dam would clearly benefit the LNID and Lethbridge, he admitted, but it would also benefit every community downstream of the dam. In one way or another, all of them depended on the unpredictable Oldman. By then, the newly formed Southern Alberta Water Management Committee was echoing Jensen's message. Maintaining the status quo with regard to the river, they argued, would mean, at best, continued uncertainty over water supplies. At worst, it would stifle growth and limit the south's prosperity.

For Lethbridge Alderman Don LeBaron, whose childhood was spent on an irrigation farm in the Barnwell area forty kilometres east of Lethbridge, mobilizing support for the dam and for an expanded irrigation industry in the south was obviously a labour of love:

I had seen first hand what irrigation could do. My dad raised vegetables on a forty-acre farm and started the original farmer's market in Lethbridge. Because of irrigation, he could raise every kind of vegetable imaginable and bring it fresh from the farm to consumers in Lethbridge. It's a part of my heritage I've never forgotten. In fact, I believe all Lethbridge residents know just how much this city owes to agriculture and to the irrigation network that makes it all possible. This is the only city in Western

Canada — maybe in all of Canada — that has an agriculture committee as part of its city council.

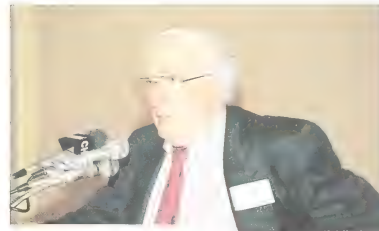
Like LeBaron, Roy Jensen looked to the past for confirmation that the long-awaited dam would have a tremendous impact on the area:

I have been on the board of directors of the irrigation district for the past twenty-five years, and from the outset I've recognized the need for better water management on the Oldman. There has been strong demand from dryland farmers to increase the amount of land under irrigation. At the same time, in five out of the last ten years, flows on the Oldman have been so low during late summer that we've had to ration water to our existing members. It's been extremely discouraging.

While LNID members, existing private irrigators and new irrigation developments to be established along the Oldman will all benefit directly from a new era of water management in the south, Jensen believes farmers in other areas will be indirect beneficiaries: "Other irrigation districts, including St. Mary's, Magrath, Raymond and Taber won't be taking water directly from the river. But the fact that they won't be responsible for supplying so much water to the Oldman



By the late 1940s, southern Alberta had one of the largest concentrations of irrigated land in Canada and fields like this one at Taber became a prime source of sugar beets, corn and other vegetables.



"Irrigation farming is a part of my heritage I've never forgotten. In fact, I believe all Lethbridge residents know just how much this city owes to agriculture and to the irrigation network that makes it all possible."

ALDERMAN DON LEBARON
CITY OF LETHBRIDGE



"Much employment in Lethbridge is directly dependent on agriculture and food processing, and the economic value of food processing and agriculture in the Lethbridge area is over one billion dollars annually. Irrigation is the heart of our agricultural success."

LETHBRIDGE MAYOR DAVID CARPENTER
IN AN ADDRESS TO THE
ENVIRONMENTAL ASSESSMENT PANEL
NOVEMBER 1991

River to meet the municipal needs of Lethbridge and other downstream communities could mean new opportunities for expansion there as well."

Despite broad support throughout the south for the Oldman Dam as an integral piece in an integrated water-management system built over more than half a century, some questioned the need for more investment in agriculture at a time of apparent world food surpluses and dismal prices for agricultural commodities. Throughout the debate, irrigation farmers argued that none of the crops produced on irrigated land were in a surplus position in terms of global markets. They represented, instead, alternatives for export, further processing and significant import replacement.

Another strong proponent of the dam, Mayor David Carpenter of Lethbridge, told a November 1991, federal Environmental Assessment Review Panel hearing in Lethbridge that agriculture and its spin-off benefits have provided the city with a steady economic balance and,

If we are wise, it will mean stability in this area for a very long time. Much employment in Lethbridge is directly dependent on agriculture and food processing, and the economic value of food processing and agriculture in the Lethbridge area is over one billion dollars annually. So, we have an interest in keeping the agriculture industry viable — a significant interest — and that is why I have taken a very strong position in support of the Oldman River Dam. Irrigation is the heart of our agricultural success.

Carpenter was among many southern Albertans who agreed that water-management alternatives, such as off-stream storage and conservation, deserved

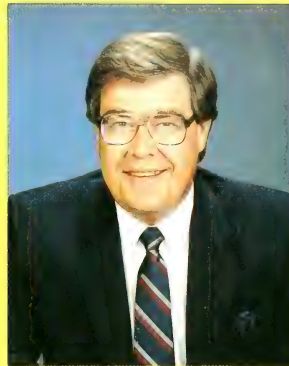
serious consideration during a lengthy resource-planning exercise that preceded the decision to build the Oldman River Dam:

I applaud the efforts of the Alberta government, irrigation districts and irrigation farmers to increase their effectiveness at conservation. And I note the approximately half billion dollars spent since the mid-seventies to achieve these goals. But at the same time, given the law of diminishing returns, does it make common sense to be spending such incredible sums so that efficient utilization can be made of 40 per cent of the flow while we sit back and ignore the 60 per cent which can only feasibly be collected through on-stream storage?

Weighing the importance of water

Alberta Public Works, Supply and Services' Minister Ken Kowalski, whose involvement with water management and the Oldman River Dam spanned both the Public Works, Supply and Services and Environment portfolios, remained closely attuned to all aspects of the program to encourage efficient use of a limited water resource in southern Alberta. In a 1992 assessment of water management strategies for the south, he commented,

In the southern part of the province you have a water deficit. Yet, at the same time, you have tremendous hours of sunlight and high temperature units. If you take the mix of the heat and the light and throw some water into that, you can have a tremendously productive breadbasket. It was clear to me that in a part of Alberta that essentially is devoid of natural



As minister of the Environment in 1986, Ken Kowalski came to "the very strong conclusion" that the Oldman River Dam was essential from the standpoint of both balanced economic growth and preservation and enhancement of water resources. As minister of Public Works, Supply and Services, he would continue to head the department responsible for overseeing engineering and construction of the dam, reservoir and related works.

resources like tar sands or trees — an area with little oil and natural gas compared to other parts of the province — you simply had to rest back on one major industry and that was agriculture. But agriculture can't work without water. So, when the government developed the irrigation upgrading and rehabilitation program in the mid-seventies — a program we're still involved in in the 1990s — that whole concept of conservation, the preservation of water, the idea of enhancing the resource and maximizing its uses, became very acute to me.

In 1986, as minister of the Environment in the newly formed government of Premier Don Getty, Kowalski had the opportunity to carefully re-examine his feelings about water management in southern Alberta — and the need for a dam on the Oldman River:

The premier asked for my thoughts. It was true that government had made a commitment in 1984 through then-



Premier Don Getty

Premier Peter Lougheed that we were going to build the dam, but this was a new government. The leadership had changed. Premier Getty pointed out that we had a new mandate and we would have to rethink all of these things. I went away for several weeks and reviewed everything about this project in my mind, took my biases about balanced economic growth and preservation and enhancement of resources, and I came to a very strong conclusion that the Oldman River Dam was essential. I was totally committed from day one because of my personal beliefs and background.

When he returned to Cabinet, Kowalski recalls, he had a clear answer: "This is a project that is important. It's a project that's necessary. It's a project I recommend. I want to be the builder of the Oldman River Dam." Still, he was convinced the option was clearly there for him to scuttle plans for the dam. "It could have come off the table. It would have been a very difficult political issue to deal with, but if I had felt very strongly in my mind as a minister of the Crown that it was not the right thing to do, I am absolutely convinced I could have won my way. Ultimately, you can only do what you think is right."

Revamping the network: an investment in the future

Up to 31 March 1991, the Alberta government, through the Alberta Heritage Savings Trust Fund, had invested 785 million dollars in the expansion and refurbishment of southern Alberta's irrigation network. The money — funnelled through the Irrigation Rehabilitation and Expansion Program and the Water Management Systems Improvement Program — helped thirteen irrigation districts plan, rehabilitate and expand their distribution networks.

The transformation has been impressive. Headworks and canals, in some cases badly deteriorated from roughly half a century of use, have been replaced or rehabilitated. New reservoirs have appeared on the landscape and others have been raised or expanded. Pipelines, syphons, balancing reservoirs, modern controls — all have been added or upgraded to create one of North America's most efficient irrigation systems. Once leaky canals, now lined with concrete or plastic to prevent water loss, contribute to water conservation while efficient sprinkler systems make best use of the resource.

The operation and maintenance costs of the distribution systems are completely paid by the irrigation districts. As well, the irrigation districts have contributed fourteen cents of every dollar spent on rehabilitation and expansion of the system. The 86:14 formula was based on economic studies that show water users themselves can expect to enjoy approximately 14 per cent of the annual benefits arising from the current investments in irrigation. Alberta receives an estimated 66 per cent of the benefits — through such things as reclaimed land, increased irrigated acres and construction activities. The remaining benefits go to other Canadian provinces.

While irrigated fields have been shown to be up to three times as productive as dryland parcels, the conversion from dryland to irrigation farming



In recent years, millions of dollars from the Alberta Heritage Savings Trust Fund have been funnelled into improving and expanding the irrigation network across the south. To 31 March 1991, a total of 785 million dollars had been invested in headworks, canals, pipelines and other elements of an efficient water-management system.



By 1982, irrigable land in Alberta had increased to over one million acres and the percentage being sprinkled had increased to 74 per cent. In 1991, irrigation farmers estimated that it cost four hundred dollars per acre to convert from dryland to irrigation farming.

takes considerably more than an assured water supply. Veteran irrigation farmer Jack Brewin, who farms land homesteaded by his father in the Purple Springs area east of Lethbridge, served on the Board of Directors of the St. Mary River Irrigation District for close to three decades. Asked to share his knowledge of irrigation farming during Oldman River basin studies conducted in the 1970s, Brewin pointed out that it takes between thirty and forty years to develop an irrigation project. "Then it takes a couple of generations to convert a dryland farmer to an irrigation farmer. You need very sophisticated equipment and very intelligent young people who understand how to use it to its full potential."

A 1984 Underwood McLellan Limited study, commissioned by the Alberta Irrigation Projects Association, estimated total farm outlay on irrigation equipment and maintenance between 1969 and 1984 at more than two hundred million dollars. With the promise of the Oldman River Dam on the horizon, the consultants predicted another one hundred and fifty million dollars would be spent on farm irrigation systems between 1985 and 1989. In 1991, LNID members estimated the cost of converting fields from dryland to irrigation farming at four hundred dollars per acre.

THREE

Exploring Options



Work on the Oldman River Dam was well under way when Ron Middleton, a mitigation manager with Alberta Public Works, Supply and Services, was lecturing to University of Alberta students on aspects of the Oldman River Dam. Suddenly, he was struck with an interesting thought: “I realized that many of these students weren’t even alive when government began exploring water-management options in the Oldman River basin. This whole process was so protracted, it had somehow created the perception that this was a sudden move on the part of government. Many people seemed to think that the Alberta government simply woke up one morning and said, ‘Hey, let’s build a dam and upset a lot of environmentalists!’”

Middleton, whose involvement with the project goes back to the early 1980s, confirmed that nothing was further from the truth: “Almost two decades ago, early planning studies were looking at supply and demand issues in the basin. These were not purely engineering studies. They also looked at the implications of a dam for fish and wildlife and archaeological and recreation resources.”

In fact, interest in the future of the Oldman River basin was already beginning to surface in 1958, when the Social Credit government of the day requested the Prairie Farm Rehabilitation Administration (PFRA), a federal Department of Agriculture agency, to explore the feasibility of building a storage reservoir at the Livingstone Gap site. When the PFRA report was received in 1966, the government learned that the Gap site presented serious geotechnical problems. It was also recommended that the Three Rivers site — the spot where the Oldman River Dam would ultimately be built — be further investigated.



Alberta was the first province in Canada to establish a Department of Environment. As its first Progressive Conservative Minister, William Yurko took a far-sighted approach to water management, noting that water was Albertans' "primary resource and our most valuable commodity."

In 1971, with the election of a Progressive Conservative government under Premier Peter Lougheed, Alberta's newly minted Department of the Environment took over responsibility for all water-management programs and policies in the province. As the Progressive Conservative's first provincial minister of the Environment, William Yurko became an eloquent spokesman for all matters of environmental importance to the province, including the need for a far-sighted water-management strategy. On 7 July 1972, Yurko told delegates to the Canadian Water Resources Association Conference, "Water management is the subject of much discussion these days . . . and it should be. It is our primary resource and our most valuable commodity. It is therefore paramount that this resource be managed for the greatest good of all our people."

Yurko also believed the Alberta government had a special role to play in managing Canada's water resources because of its "unique position as landlord over the head-waters of some of the nation's most important drainage basins."

Interest in the Oldman River basin mounted in 1974, as first the Premier and, then, the Environment minister held meetings in Lethbridge to discuss water-management issues. In July, Yurko made a commitment to the Alberta Irrigation Projects Association that government would study and review potential water storage possibilities in southern Alberta. On 14 August, he announced the Oldman River Study.

Lorand Szojka, an engineer and Alberta Environment's Oldman River basin planner, had come to the department in 1974 from PFRA via the Prairie Provinces Water Board. Recruited to manage the study project, he now recalls, "There was a sense that there was a crisis in the basin and that this was the number one priority." A task force was formed to conduct what would become phase one of the Oldman River Flow Regulation Studies. Made up of eighteen members from seven government departments as well as representatives from industry and local government, the technical committee drew much of its information from studies conducted by PFRA and the Prairie Provinces Water Board.

In a year of whirlwind activity, Szojka recalls making at least eighty-seven trips between Lethbridge and



By the early 1970s, both the federal and Alberta governments were exploring options for preserving spring-time flows on the Oldman River. By impounding water in off-stream or on-stream reservoirs, operators could later release it to help deal with shortages in the traditionally dry months of July to October. Several sites were studied both upstream and downstream of today's Oldman River Dam before the final choice was made in 1984.



By the early 1970s, provincial government planners realized that only an ambitious water-management program could ensure canals would stay full during late summer periods of peak demand. When a provincially appointed technical committee made up of provincial and local government officials and industry representatives studied the issues, they reported that the Three Rivers location (now the Oldman River Dam) appeared to be the best choice for on-stream storage. The phase one studies committee also urged that opportunities for further off-site storage be examined and that public involvement in decision-making be encouraged.

Edmonton: “The study began with the knowledge that the Alberta government supported the idea of a dam, but our job was to come up with recommendations regarding timing and location. Our report was technically oriented and our involvement in the field was rather miniscule. It was mainly an office-oriented planning exercise based on information already available.” Nonetheless, in addition to addressing water demand and supply issues, the task force addressed environmental considerations ranging from parks, recreation and fish and wildlife to sedimentation and water quality.

Having evaluated nine separate sites for a dam, the technical committee reported that the Three Rivers site appeared most attractive at that time. However, it recommended that a detailed analysis of economic, sociological and engineering considerations be done. “We also recommended that the report be made public and that possibilities for off-stream storage in the region be further investigated,” Szojka adds.

In 1976, then Minister of Environment Dave Russell released the technical committee’s report to the public for review and comment. Meetings were held in Pincher Creek, Fort Macleod, Lethbridge and Bow Island, and a number of responses were received from interested groups such as the Peigan Indian Band, the Municipal



Six public citizens and three senior civil servants served on the management committee that conducted phase two studies of water management in the Oldman River Basin in the mid-1970s. As part of the study, twenty-two meetings and more than a dozen public workshops were held throughout the basin. Photographed during a break in public hearings were committee members Hilton Pharis, Cowley area rancher and councillor, MD of Pincher Creek; Jack Brewin, irrigation farmer from Purple Springs and chairman of the St. Mary Irrigation District; and John Zoeteman, Fort Macleod rancher and member of the Oldman Regional Planning Commission.

District of Pincher Creek and the Cowley Lions Club. These responses helped define areas that would require further attention during the next phase of studies.

Among points most commonly raised in the seventy-one responses received was the need for detailed study of the water demand-and-supply potential in the Oldman basin, study of irrigation deficiencies, a closer look at off-stream storage and inclusion of “quality of life” considerations as well as economic and engineering issues. There was also a call for individual and community participation in future studies.

Phase two studies were launched in February 1977, under the direction of the Oldman River Study Management Committee, a nine-member group that included three members of the Alberta government and six representatives from the public. Its purpose was to make recommendations regarding overall water management in the basin and address the concerns of area residents. Not only would it dig deeper than phase one studies into areas such as salinization, sedimentation, recreation, fish habitat and other environmental issues related to the proposed dam sites, it would also study alternatives to dam construction.

All potential on-stream and off-stream storage sites identified in phase one were evaluated — with the result that many of the potential dam sites were eliminated. If the final water-management strategy for the province was to include on-stream storage, the committee considered the three likely choices to be the site called Three Rivers, near the confluence of the Castle, Crowsnest and Oldman Rivers, a site near Fort Macleod and one on the Peigan Reserve near Brocket.

To generate interest in government’s plans for the region, the committee mailed ten thousand flyers to households across southern Alberta, explaining what was being studied in phase two and inviting the public to get involved. Hundreds of people took advantage of the flyer’s “Count Me In” coupon, which guaranteed a spot on the mailing list



As the Oldman River basin came into the spotlight in the 1970s, Henry Thiessen, assistant deputy minister, Alberta Environment, discussed water-management options with Gary Hartman of Alberta Agriculture.

to receive further information. A flurry of press releases and press conferences followed to keep residents informed of the study's progress. Open houses were held in Pincher Creek, Lethbridge and Medicine Hat, and, during 1977 and 1978, the management committee held twenty-two meetings and more than a dozen public workshops throughout the basin. At twenty-seven information centres across the south, interested Albertans could review the consultants' reports and study the management committee's recommendations.

Assistant Deputy Minister of Environment Peter Melnychuk, chairman of the phase two management committee, recalls, "The committee worked for two years on this, holding public meetings throughout the basin. Then we had consultants pull together an enormous amount of

information which was incorporated in the final report. We proposed a solution to long-term water-management problems in the basin that we felt would take it into the year 2005."

The report first recommended rehabilitating the irrigation system, to make sure the available water was being properly used. "Then we recommended that water conservation and irrigation practices be instituted that would schedule the supply of water only when it was needed. Finally, our report called for a combination of on-stream and off-stream storage facilities as part of an integrated system," Melnychuk adds.

Following submission of the management committee's Oldman River Final Report to the minister of Environment in August 1978, the Environment Council of Alberta (ECA) was asked to hold public hearings throughout the Oldman River basin. As a reflection of growing environmental awareness, more than a thousand people crowded into meetings in eight centres across the south, from Cowley to Medicine Hat. Businesses and agricultural committees, local governments and Indian bands, environmental lobbyists and other special interest groups took the opportunity to make



Development of major off-stream storage reservoirs was among seventy-five recommendations made to the minister of Environment in August 1979 by the Environment Council of Alberta (ECA). An advisory body to government, ECA had gathered public opinion during hearings across the south. Government accepted forty-six of the recommendations, including development of Forty Mile Coulee, shown above, and other major reservoirs.

their views known on everything from fish habitat to the economics of irrigation expansion. In all, the council, a body established by government in 1970 to hold hearings and receive submissions on environmental matters, received 238 briefs and presentations, including 109 from individual Albertans. It was clear that the process itself had captured the interest and imagination of residents and others concerned with the handling of major resource projects. After weighing public input, a four-person water-resources panel of ECA submitted a report to the minister of Environment in August 1979, setting out seventy-five recommendations.

Peter Melnychuk notes that government ultimately adopted forty-six of the seventy-five ECA recommendations, including those calling for development of off-stream storage, rehabilitation of the irrigation system and conservation



Keho Lake reservoir is another link in the water storage and flow regulation system in place in the Oldman River basin. As well as providing water-based recreation, including boating, fishing and swimming, man-made lakes such as Keho also support a modest commercial fishing industry that produced three hundred thousand dollars worth of sales in 1989.

measures. Agreement on these points was reflected in the subsequent development of major off-stream storage areas, including Forty Mile Coulee, Keho Lake and Stafford Reservoir, and in the on-going investment in canal rehabilitation and upgrading of irrigation headworks. However, government failed to agree with the ECA conclusion that there was no need for on-stream storage if all of the other suggested water-management strategies were followed. “It was simply a different vision for the south,” Melnychuk says. “If you wanted to have expansion of irrigation and guaranteed in-stream flows for municipal use, to protect fisheries and exploit the potential for recreation and tourism, it seemed clear that a combination of both in-stream and off-stream storage would be required. Government felt there had to be some vision for the south beyond a no-growth scenario.”

Fourteen years later, management committee member Jack Brewin, chairman of the Alberta Irrigation Council and the St. Mary’s River Irrigation District, spoke about these contrasting visions for southern Alberta: “It wasn’t that government was determined to build a dam, no matter what. In fact, I felt throughout the study process, the Alberta government really didn’t want to

build the dam. But the studies showed that off-stream storage alone couldn't produce the desired results. It came down to this: If you wanted development, a dam had to be built; if you didn't want to encourage development and economic stability in the south, then you didn't build it."

At the close of the 1970s, Albertans waited for government's decision on a water-management strategy for the Oldman River basin. It was clear that many southern Albertans felt a certain ambivalence about the options they — and government — faced in securing a stable water supply for the region. As Calgary *Herald* staffwriter Peter Morton reported on 14 June 1980, the ECA hearings confirmed that "as farmers, the people of southern Alberta wanted a dam. As residents, they did not."

Management committee member Hilton Pharis, a Cowley area rancher and councillor for the Municipal District of Pincher Creek, put the dilemma in perspective in a statement issued prior to the ECA hearing: "The conclusions reached by the management committee that off-stream storage should be implemented for the near-future water needs is sound. The decision that on-stream storage is necessary if the irrigation acreage in the Oldman River basin is to be developed to its maximum is also sound. The question the committee was unable to answer is: Do the people of Alberta think the price that must be paid for maximum development is justified?"

Left to brood over this conundrum, according to the *Herald's* Morton, was Environment Minister Jack Cookson. Morton cited the minister's remarks in the legislature, suggesting that they meant Cookson was leaning less toward the ECA recommendations than toward the management committee scenario that envisioned an integrated blend of on-stream and off-stream facilities. Within a little over two months, Cookson would make his announcement. In the meantime, Morton's assessment of what it would mean to Albertans had a prophetic ring: "Announcing the government's decision may end the years of speculation," he wrote. "But it certainly won't end the controversy."



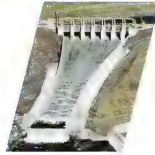
"I think we have to realize – in resource development as in life – that there is never a 100 per cent gain. There is always some loss in the gaining. That's particularly true in the case of water resources. You always do some local damage in the process of providing economic benefit to an entire region."

LORAND SZOJKA
OLDMAN RIVER BASIN PLANNER



FOUR

Decade of Decision



During the summer of 1980, senior government officials and members of the Caucus Committee on Water Resources studied recommendations contained in the Oldman Basin Final Report and the ECA Final Report. By 29 August, Environment Minister Jack Cookson and Agriculture Minister Dallas Schmidt were ready to announce the government's decision. A ministerial statement outlined a 334-million-dollar investment in southern Alberta's irrigation system and confirmed that the government was committed to building a dam and reservoir on the Oldman River. While the Three Rivers site was seen as the best choice, the ministers said no funds would be allocated until the Peigan

OPPOSITE: The Alberta government's August 1980 announcement that it would build a dam on the Oldman River also included the promise of a 334-million-dollar investment in southern Alberta's irrigation system. As this 1983 photo shows, work on canals and headworks was quickly under way. But the final decision on the site of the dam and reservoir would not be made for another four years. The delay was to allow the Peigan Band to study the possibility of having the dam built at an alternative site on reserve land.

Indian Band had a chance to submit a proposal regarding a dam site on the reserve. In the meantime, fifty-seven million dollars would go into the development of off-stream water storage at Keho Lake, serving the Lethbridge Northern Irrigation District, and the Forty Mile Reservoir, which feeds the St. Mary River Irrigation District. Together, these projects represented another one hundred thousand acre-feet of water to help southern Alberta cope with chronic water shortages.

For Pincher Creek-Crowsnest MLA Fred Bradley, Cookson's announcement led to what he described to his constituents as "the most difficult decision in which I have had to participate." Representing an area that stood to bear the brunt of development while the major benefits would be felt downstream, Bradley had promised to push for consideration of

“all alternatives” to a dam. While welcoming word that millions would be funnelled into off-stream storage projects and upgrading and rehabilitating canals and irrigation works, Bradley admitted he had agonized over government’s conclusion about the need for a dam.

On 30 August 1980, local newspapers carried his column, “Report from the Legislature”: “After examining all the evidence, I, too, have come to the conclusion that on-stream storage will be required to meet the future need for water in southern Alberta for domestic consumption, municipal purposes, irrigation and agricultural and other uses.”

Timing of the project, he said, remained uncertain. Some saw the need for a dam immediately; others felt it would not be needed until 2000 or later. “Whose crystal ball is accurate I’m not willing to predict, but I suggest that the need will become increasingly apparent in the years to come,” Bradley wrote.

On the touchy subject of location, Bradley remained firm. Concerned about the potential for a social and environmental impact on the Pincher Creek area if a dam were to be built at the Three Rivers site, he wrote, “In my mind, if the matter can be negotiated at Brocket, it would be preferable to me and the majority of the citizens of this constituency. I will hold any further comment on the Peigan proposal in order to not jeopardize future discussions on this critical question.” As it turned out, the Pincher Creek MLA would see four years pass before he could provide an answer to his constituents. By then, he would be delivering government’s decision as Alberta’s fourth minister of the Environment.

The choice of dam site now lay between the Brocket and the Three Rivers sites. The Macleod site, once considered a viable option, was judged to be too expensive to operate because of the need to pump water out of the reservoir to canal systems on higher ground. “It would take energy to do that — and the costs of that would go on forever,” Environment’s Melnychuk observed.



While residents of the Peigan Reserve debated the merits of negotiating for a dam at the Brocket site, many Band members worried about the impact of such a project on their children and on the traditional Native way of life.

Now, the Peigans were serious contenders in the bid for the dam. Not convinced that it would be a good thing for the reserve, the Band nonetheless welcomed the opportunity to explore the positive and negative aspects of a dam on reserve property. Several meetings between the province and the Peigans resulted in an Alberta government agreement to provide two hundred and forty thousand dollars in funding for studies to help the Band make up its mind if it wanted the dam and, then, to develop its proposal. The federal government was also involved, providing funds to support a one-million-dollar package of consultants' investigations called the Weasel Valley Studies. They were named for the valley that would be flooded to accommodate the dam.

While a Peigan study team under the direction of Peter Yellowhorn, a band member and Calgary oil company executive, maintained control of the project, consultants zeroed in on a broad range of issues related to the dam and its social and economic impact on the band members and the community of Brocket. Water use for industry, land irrigability, fisheries, wildlife resources and historical resources all came under the scrutiny of consultants. Information on water quality was gathered, and the types of crops the Peigans could expect to grow with the help of irrigation were examined. Experts were commissioned to explore potential recreational development within the valley of the reserve, identify education requirements related to the development and explore priorities for development.

Although Environment Minister Cookson had envisioned an eighteen-month study period for the Peigan proposal, government agreed in late 1982 to extend the deadline to allow the Peigans to reach a consensus about the dam. On 17 November 1982, the Pincher Creek *Echo* reported that the Peigans planned two referendums for early the next year. "One would determine if the Peigan council should negotiate with the province for a dam and the second would seek approval for whatever deal is approved."



When Agriculture Minister LeRoy Fjordbotten and his colleagues met southern Alberta farmers at a meeting in Picture Butte in the scorching summer of 1984, both politicians and southern Alberta residents were of a single mind: It was time to build the dam! As a farmer and MLA for Macleod, Fjordbotten had witnessed the frustration that chronic water shortages caused both urban and rural residents.

The same article quoted Peter Yellowhorn as saying that a recent survey indicated that half the valley residents favoured the idea of a dam on the reserve, while the other half were against it. Once again, a group of southern Alberta residents faced a major dilemma — how to balance the ultimate benefits of long-term water security against the immediate impact on people and a traditional way of life.

In the early 1980s, with the dam temporarily on hold, much of the province's media turned its attention to other events. In the south, however, the Peigan's progress in deciding the merits or otherwise of allowing the dam to be built on their reserve was carefully chronicled by reporters.

In August 1982, the Lethbridge *Herald* reported an exchange between Macleod MLA LeRoy Fjordbotten and Environment Minister Jack Cookson. During a Heritage Savings Trust Fund committee meeting, Fjordbotten asked about decision-making progress on the Peigan Reserve. Cookson replied, "We're pushing forward as quickly as we can to resolve the very complex issue," adding that the Three Rivers site was still under consideration. According to the report, the Macleod MLA later told a reporter, "I am concerned about ongoing studies and no real commitment to that dam. We don't have the oil and gas and other things in the south. What we need to be doing is expanding irrigation and we need to be processing more products. It's all tied to water."

Michael Lamb of the Calgary *Herald* wrote in December 1982, "The Brocket site has been kept alive by eleventh-hour Indian requests. Some band officials say the Peigans may be willing to host a dam and reservoir if benefits can be accrued and impacts lessened. The Peigans are still studying the matter and [Environment Minister] Bradley says he's not prepared to rush their decision." Two weeks into his new portfolio, Bradley told Lamb that as "a reasonable man," he would not pressure the band to make hasty decisions.

Soon, Yellowhorn, too, would be fitting into a new job. In January 1983, he was elected Peigan chief. Now he was truly at the centre of deliberations about the dam. Some residents were concerned about the potential loss of the Weasel Valley's history, with its tipi rings, cairns and burial sites. The environmental component of the Weasel Valley Studies showed fifty prehistoric sites and that forty historic sites would be lost to the reservoir. The studies also showed that twenty-nine reserve homes would be lost. In the meantime, the Peigan study team visited Cree Indians near Regina, downstream from the Diefenbaker Dam. A Peigan spokesman reportedly said later that the hydro-irrigation dam had

created havoc for the Cree bands, flooding their lands, creating hardship for cattle owners and prompting residents to migrate to the cities. Like dozens of other considerations, this was another element to be worked into the decision-making process.

Early in 1983, the Peigan tribal council indicated it would begin negotiating with the province regarding a dam near Brocket — without first holding a referendum. This would allow a referendum to take place in the fall, after preliminary negotiations were complete. Rumours flew. One report suggested the Peigan Band would put a one-hundred-million-dollar price tag on the reserve land needed to build a dam. There was talk of a government/Peigan partnership. As the media speculated over the outcome of negotiations, LNID farmers, prepared by forecasters for a scorching summer, called for quick action on the dam. Meanwhile, in the area around Pincher Creek, Lundbreck and Cowley, many residents eyed the river valley with concern, wondering if familiar landscapes would soon be altered. If government's decision favoured the Three Rivers site, farmers in the river valley would have to move, in some cases from property that had been in the family for generations. The uncertainty prompted one MD councillor to proclaim wistfully, "At least the Peigans have a choice. We don't have that luxury."

In November of that year, Peigan Chief Peter Yellowhorn wrote to the minister of Environment, outlining Peigan concerns and suggesting that the parties explore a government/Peigan joint venture to develop the Brocket reservoir. "The members of the Peigan Band are aware of the needs and concerns of the Province of Alberta for the future economic development of this region," he wrote. "We are also Albertans who share these needs and concerns and propose that a comprehensive social-economic development plan be incorporated into the joint venture for the development and operation of the Brocket reservoir." In return for the use of forty-two hundred acres of reserve land for the life of the project, the band would expect compensation, cost-free hydro power and considerations related to agricultural development, training and employment opportunities. Yellowhorn also suggested an alternative, which he admitted would not likely find favour with government — the Peigans would obtain private financing and build the dam and reservoir themselves.

In April 1984, the Environment minister told the Lethbridge *Herald* that government would decide on the location of the Oldman River Dam by mid-summer. According to the report, the provincial officials had not yet responded to a November 1983 proposal from the Peigan Band. Bradley said that government continued to review the concepts put

forward by the Peigans but that “no firm proposals” had been presented.

Several factors troubled government decision-makers. Peigan land was beyond the control of the province, raising questions of jurisdiction over the reserve land needed for the projects. There were questions regarding control of water rights. Uneasy memories remained of an earlier Peigan/government confrontation over land claims and access to the LNID irrigation weir on reserve land. That dispute had finally been settled but, according to the chief, the Peigans continued to claim “historical and legal jurisdiction over the waters of the Oldman River.” At the same time, the band remained opposed to surrendering land, understandably fearful that members would lose any hope of involvement in the project and its benefits. Moreover, there was now a new element to be considered. The once-booming Alberta economy was obviously beginning to sag in the face of recession and weak world oil prices. Money for megaprojects was in short supply.

For the most part, southern Albertans adopted a wait and see attitude about the dam. But not all were anxious to see the massive project — one of the largest ever to be undertaken by the Alberta government — get underway at any site along the Oldman. A 24 April 1984 editorial in the Lethbridge *Herald* called for yet more study of the issue, suggesting that government continue to explore alternative water-management options identified during years of study. While LNID spokesmen continued to push for the dam, the writer noted, “opposition has not yet mobilized.” In contrast, *Herald* Business Editor Ric Swihart, often seen to be at odds with the paper’s editorial stance on the dam, produced a 10 July column that flatly declared, “A dam is long past due. It is the only way man can attempt to control one of the world’s greatest natural resources, a fact which becomes even more critical when that resource can be controlled to the benefit of the province’s greatest renewable resource — agriculture.”

By 17 July, when more than four hundred southern Albertans — including a large contingent of farmers — packed a Picture Butte school auditorium to demand a commitment on the Oldman River Dam, the weather could hardly have been more co-operative. In the midst of a heat wave, the region was literally running out of water. Little Bow MLA Ray Speaker, a member of the Representative Party, referred to the idle irrigation equipment he had passed on his way to the meeting and reportedly observed in frustration, “It was like a sea of silence.” Speaker had long been a vocal supporter of government’s plans to build the dam. Now his impatience with continued delays on a dam decision was obvious. In contrast, members of the official New Democratic Party opposition in the legislature were solidly against the plan to dam

the Oldman. (As Fred Bradley would later declare, “In those days during elections, I ran against candidates of four different political stripes — Liberal, Social Credit, Western Canada Concept and NDP — and in each case one of their positions was opposition to the dam.”)

During a meeting that lasted several hours, Agriculture Minister LeRoy Fjordbotten accepted fourteen briefs from southern Alberta farm groups and urban dwellers and reiterated government promises that a decision on the dam would be made that summer. Alan Hyland, Cypress MLA and chairman of the irrigation caucus committee, suggested southern Albertans gain support for the dam by educating their northern friends about the importance of irrigation in the provincial economy, and both Lethbridge West MLA John Gogo and Henry Kroeger, chairman of the Alberta Water Resources Commission, pledged support.

Despite sometimes raucous outbursts, politicians and constituents seemed generally in tune. But in the crowded and stifling hall, tempers occasionally ran hot. Roy Jensen, Shaughnessy area farmer and spokesman for the Lethbridge Northern Irrigation District, expressed frustration with delays in the dam decision, suggesting that government was bending to anti-dam lobbyists. Nearly a decade later he recalls the meeting with a quiet smile: “I simply told the politicians that governments had been talking about better water storage on the Oldman since the thirties. It was time to see some action!”

Less than a month later, southern Albertans saw some action. Government had made its decision. On 8 August 1984, at a press conference in Lethbridge, Premier Peter Lougheed and Environment Minister Fred Bradley announced that government would proceed with construction of a dam at the Three Rivers site on the Oldman River, about ten kilometres northeast of Pincher Creek. A news release cited “significant economic compensation identified by the Peigan Band and higher construction and reservoir costs for the Brocket dam” as reasons for selecting the Three Rivers site. Comparisons showed that construction and reservoir costs alone



By 8 August 1984, the long wait for news about the chosen dam site was over. Premier Peter Lougheed and Environment Minister Fred Bradley announced it would be built below the confluence of the Castle, Crowsnest and Oldman rivers at a site about ten kilometres northeast of Pincher Creek. Compared to the proposed Brocket site, they said, a dam at Three Rivers would have greater storage capacity and would cost less to build.



While outdoor enthusiasts feared for the loss of precious habitat that would accompany construction of the dam and reservoir, this youngster simply decided to "go fishin" — in this case, on the beautiful Castle River upstream of the dam.



Despite government's commitment to make sure those affected by the dam and reservoir project would be fairly compensated, some residents of the Oldman River Valley were understandably reluctant to pull up roots. In windswept southern Alberta, valley farmsites sheltered from gusts of up to 150 kilometres per hour are a desirable commodity. In all, fifty-two landowners sold all or part of their holdings to accommodate the project.

would be an estimated 72.5 million dollars higher for the Brocket site. There were others reasons given for the choice. The reservoir at the chosen site would have storage capacity of four hundred thousand acre feet of water compared to three hundred eighty thousand at Brocket, and Three Rivers offered significantly more hydro-electric potential.

For proponents of the dam, particularly hundreds of drought-stricken farmers downstream of the proposed reservoir, word that the project would finally get under way was greeted with enthusiasm. In the Lethbridge area, there had been no measurable rainfall between 23 June and 29 July and May run-off in the Oldman River basin had been the lowest recorded in seventy-two years. In late July, the town of Fort Macleod had instituted watering restrictions for homeowners and businesses because of a dwindling flow in the Oldman. The benefits of a secure water supply in the basin would not be felt for several years. But, as one irrigation farmer put it nearly a decade later, “The announcement alone was like getting a good three-day downpour.”

In announcing the dam, Premier Peter Lougheed said, “The dam will bring substantial benefits to southern Alberta and is consistent with the government’s commitment to water-resources management and the upgrading and expanding of Alberta’s irrigation systems and land base. This decision is an example of the priority this government places on river-basin management and water-storage programs as outlined in the proposals contained on page 65 of the ‘White Paper on Industrial and Science Strategy for Albertans 1985-1990.’”

Reporters, who dug through files to trace the Premier’s reference, would find the following: “Major commitments have been made since 1974 in upgrading and expanding Alberta’s irrigation systems and land base. Priority must be placed on additional river-basin management and water-storage programs which will enhance the present initiatives of irrigating new acres of agricultural land.” Immediately prior to the announcement, the Environment minister had dispatched letters to landowners who would be directly affected by the decision to build the dam at Three Rivers. A letter was also hand delivered to the Peigan Band, advising them of government’s intentions. Following the announcement, Environment Minister Fred Bradley and LeRoy Fjordbotten, MLA for Macleod, flew to Pincher Creek to meet with Band Council.

Reaction to the announcement was predictable. Picture Butte farmer John Zeinstra, a faithful booster of the project, told Calgary *Herald* reporter Bob Beaty that the long-awaited decision had left him “really emotional.” According

to Beaty, Lethbridge Mayor Andy Anderson was equally jubilant, predicting the announcement would instill economic optimism among the region's farm, industrial and municipal users. But at the other end of the waterway, farmer Doug Buchanan, who stood to lose his farm on the Castle River to the reservoir, deplored the fact that farmers in the area had not been left alone to "get along with nature" — despite the odd dry year.

Lundbreck-area rancher Hilton Pharis, who would later play a key role in the Oldman River Dam story as chairman of the Local Advisory Committee, recalls that the final decision on siting of the dam came almost as an anticlimax to Pincher Creek and area residents: "Certainly everyone had known what was going on. There was no great protest when the announcement was made. It was expected." Municipal governments in the area had already indicated they favoured the dam, provided local interests were protected.

That did not mean everyone was delighted with the decision. Groups such as the Foothills Protective Association and the Alberta Fish and Game Association had repeatedly expressed concerns about a wide range of social and environmental issues related to the dam. Anglers, in particular, were dismayed that flooding parts of the Castle, Crowsnest and Oldman rivers to create the reservoir would destroy some of Alberta's most spectacular trout-fishing waters. A group called Committee for the Preservation of Three Rivers, headed by local landowner and NDP election candidate Mike Cooper, argued against the dam as well, claiming the money spent on the dam constituted an unfair subsidy to irrigation farmers.

At the same time, concern was expressed by farmers and ranchers who occupied prized and picturesque bottom land along the river. For decades, they had been sheltered from the relentless winds that roar across southern coulees at up to 150 kilometres an hour. Now, they found there was no shelter from events occurring around them. Not surprisingly, many envisioned an uncertain future despite repeated government promises that they would be fairly compensated for their losses. Early attempts by area landowners to present organized resistance to the dam and to bargain as a group were soon abandoned. In the end, individual landowners made their own deals and by the close of 1987 most had settled with the Public Works, Supply and Services land acquisition group. In all, eighteen farmsteads were required for the dam and reservoir. While some families left the area, the majority purchased land elsewhere in the region and continue to farm and ranch there.

Hilton Pharis, then reeve of the MD of Pincher Creek, owned land outside the reservoir area and would not be directly affected. However, he was closely involved with those who would have to sell. He later described the land assembly process as unusually speedy as area residents accepted the inevitable. “Many years later I told a federal hearing that my feeling was the landowners involved were generally satisfied with the settlements they received — but unhappy with the process. They had come through a lot of wrangling.”

In the meantime, the Peigan Band brought a new dimension to the dam story. On 15 August, less than a week after Peter Loughheed’s announcement, an outline of the Peigan position was published in the Pincher Creek *Echo*. At its heart was the belief that Peigan treaty rights included domain over the land and resources of the reserve. That, the Peigan people contended, included “the river bed and the water resources of the Oldman River flowing through the reserve.” This was to be a contentious issue that would resurface periodically over the next several years, eventually making its way into the courts. Years later, both Bradley and Ken Kowalski reiterated government’s position that the water belonged to the Crown. In this case, they said, that meant the Province of Alberta.

With the dam now closer to reality, the national media began to focus on the project. Barry Nelson, writing in *The Globe and Mail* in early August 1984, referred to the “classic confrontation between upstream losers and downstream users.” And while the dam remained a relatively low-profile project at this point, the headline “Alberta Farmers Fight Over Dam Scheme” hinted at the scrutiny the dam would receive from the media in years to come.

With the announcement in place, government began design work on the dam and launched an Environmental Mitigation/Opportunities Action Plan. “Even though the Three Rivers site was considered the best overall choice, none of our studies suggested that a dam and reservoir could be sited there without certain social and environmental impacts,” recalls Environment’s Peter Melnychuk. Government’s plan focussed on ways to avoid or at least reduce negative impact in areas such as the ecology, agriculture and historical resources. It would also explore potential benefits in terms of new recreational and local business opportunities. Community involvement in all phases of the plan was considered crucial.

Over the next several years, government personnel from many departments worked with consultants and local residents on a wide-ranging mitigation strategy considered one of the most thorough ever conducted in the province. The plan would address such matters as reservoir operation, area agricultural issues and ecological concerns ranging from

fisheries and wildlife to vegetation and water quality. One mitigation team delved into sites of prehistoric and historic significance, identifying artifacts that could be saved and recording information about those that would be lost to the dam and reservoir. Another focussed on recreation and tourism, exploring opportunities for camping, boating, fishing and swimming and identifying the facilities needed to make the best use of Alberta's newest water body. Also under scrutiny were the land-use issues that accompanied the creation of a six-thousand-acre reservoir. New transportation and communication networks were designed, and social issues related to farmstead relocation, local services, business, employment and information programs were examined.

Tying together this complex welter of issues, concerns and potential opportunities was a Local Advisory Committee (LAC). Appointed by the minister of Environment in January 1985, the eight-member group would become a crucial conduit between area residents and project developers. Chairman Hilton Pharis made it clear from the outset that the committee "wasn't here to promote the dam." The purpose of the committee and its half dozen sub-committees (each designed to deal with one component of the mitigation/opportunities plan) was to ensure that local interests were represented, local concerns regarding the impact of the dam were heard and area residents were kept informed.

Of the roughly forty area residents who would ultimately serve on the LAC and its sub-committees, many were clearly not supporters of the dam, Bradley admits: "I appointed Hilton Pharis as chairman because I knew him as a very thoughtful, well-respected person. It wasn't necessary that everyone involved supported the dam. These were people I thought could exercise good judgement with respect to the project."

Dennis Olson, a high-school teacher in Lundbreck, was chairman of the Fish and Wildlife Sub-committee. He readily admits he was not among the enthusiastic supporters of a dam that would affect the country he loved as both landowner and avid sportsman. First involved with the Oldman Dam issue in 1980 as secretary of the Preservation of Three Rivers (a group formed to fight the dam), he nonetheless decided to put his biases aside to become part of the committee. Olson reasoned that if a dam was inevitable, the best thing to do was to have a say in how best to deal with the resulting impact on wildlife and fisheries. As the project wound down, he declared himself satisfied with mitigation efforts related to fisheries and hopeful that wildlife populations would also survive the disruption of the construction period and the loss of river-valley habitat. Describing his own involvement with the process, Olson reflects the feelings of many who ultimately

become part of the mitigation effort: “I wouldn’t class myself as an environmentalist. I’m Joe Farmer, Fisherman, Hunter — and I’m just one of many people who were determined to do the best we could for this area.”

Within weeks of its formation, the Local Advisory Committee was at work, hosting the first of close to fifty meetings, tours, delegations and open sessions that would occupy it over the next seven years. Committee members took part in trade fairs and had dozens of informal meetings with area residents. Attuned to the concerns of local residents — and with access to government representatives developing the project — the LAC became a kind of information broker, calming fears and explaining positions on both sides. “We were able to take a lot of flak that might otherwise have gone to the minister,” Pharis recalled in the final days of construction. “That meant that many of the local issues and concerns funnelled to our committee never hit the headlines.”

This ability to defuse potentially explosive issues was reflected in the successful relocation of area roads and bridges, understandably a contentious matter for residents who found their access blocked by a newly created reservoir. Like dozens of other touchy issues, transportation questions were satisfactorily resolved through joint efforts of the MD of Pincher Creek and the LAC — thanks, in many cases, to



In 1988, Local Advisory Committee Chairman Hilton Pharis (centre) discussed matters of local concern with Public Works Minister Ernie Isley (left) and Pincher Creek/Crowsnest MLA Fred Bradley, while Kerry Lowe, Alberta Environment community affairs co-ordinator, kept tabs on the proceedings.



At the Oldman River Dam Project Information Office, opened in Pincher Creek in 1984, Vivian Judd soon found herself answering dozens of enquiries daily about jobs, contract opportunities and site tours. Easy access to information was considered a key to community acceptance of, and involvement in, the project.

the community's direct access to key government people.

Although the committee found itself working with successive ministers of Environment and Public Works, Supply and Services, there was no loss of continuity, Pharis says: "Government would have been crazy to upset what they had going here in terms of local involvement — and they recognized that." Ken Kowalski, who would assume the Environment portfolio in 1986, agrees. "Government wanted no restrictions on the matters addressed by LAC," he recalls, recognizing that all issues of local concern deserved direct answers.

Even before the Local Advisory Committee was established, Alberta Environment had held open houses to inform residents about the project and describe mitigation programs. In October 1984, a project information office was opened in Pincher Creek, serving as a central point of contact for area residents anxious to learn more about the dam. If there had been little public outcry over the dam decision, it clearly wasn't because of public apathy, recalls Kerry Lowe, an Alberta Environment community affairs coordinator. Charged with establishing the office in Pincher Creek, she and her colleague Vivian Judd soon found themselves calming irate landowners and answering up to four hundred enquiries monthly on everything from project scheduling to jobs and contract opportunities. She says:



Government's commitment to use Alberta and local resources wherever possible meant hundreds of southern Alberta residents would become involved in the project as sub-contractors, suppliers or construction workers. As work at the site wound down, local residents were convinced benefits would far outlast the "mini boom." Legacies of the dam project would include irrigated agriculture and increased tourism.



Pincher Creek and area farmers look to irrigation to produce a new era of agricultural prosperity in the region. Both the Summerview area and the Peigan Reserve plan to take advantage of Oldman River water allocations to establish irrigation districts that will ultimately improve the regional economy.

Thanks to a very strong local advisory committee, we didn't have to field questions about the environmental aspects of the project. The LAC was truly our salvation! It was also a very effective way of broadening public involvement and public input. The members were very busy people with responsibilities in a number of other groups, which meant there was an even broader connection to the community. Whenever any significant progress was made in the mitigation plans, LAC devoted part of its regular meeting to an open session to keep people informed of what was happening.

Lowe saw the office as a kind of sounding board: "Even if people were yelling at you, you had to stay neutral. But you were able to alert people within the project that these concerns were coming in. You tried to get people together and talking." Pharis credits information office staff with maintaining a generally positive attitude in the community with regard to the dam: "Kerry had government's point of view and was a wonderful diplomat."

Lowe was also in an excellent position to see first hand how growing concern for sustainable development was translated into what she calls, "a different way of doing business." No longer could government simply make decisions and proceed with a project:

At one time, a dam like this would be built and it would be accepted that it was for the public good. The public outcry that would eventually surround this project shows just how important public involvement had become. This was a project with a lot of political will behind it and large lobby groups in favour, but there were also environmental concerns. I think it marked the beginning of an era in which more money, time and effort would have to be spent on the parts of the project people now see as important. The engineering work would no longer be seen as the overriding aspect. In the case of the Oldman River Dam, government was very committed in terms of environmental mitigation and very co-operative with local people. There was strong motivation, of course, because they wanted it to fly.

A resident of Lethbridge at the time she was seconded to the project, Lowe became an objective observer of attitudes in Pincher Creek and area: "There were the initial worries of the landowners and these were addressed by what most seemed to view as fair settlements on their land. Then, later, when environmental lobbyists and others mobilized

opposition to the dam, the objectives of the community had changed. People were saying, 'Where were you high profile opponents when we needed you, when we might have been able to turn this around?'" Many area residents agree that, whatever the timing of the most vocal environmental opposition to the dam, it indirectly helped focus government attention on the concerns of area residents. "Let's just say it didn't hurt us," says Hilton Pharis.

While area residents had to put up with some frustrations during the construction period, Reeve Tom Ferguson of the MD of Pincher Creek believes the result was worth it: "We have ended up with a road system second to none in Alberta. Everyone we worked with, including all of the project people and cabinet ministers, gave us 100 per cent co-operation." Although the MD lost part of its tax base when lands along the river were flooded, Ferguson hopes planned irrigation farming will ultimately balance the ledger. "Although land in the river valley was not highly productive and therefore not a great tax base, the loss nonetheless made a fair dent in our tax revenues."

Like many who live in communities surrounding the Oldman Dam, Ferguson has tried to maintain a sense of balance about the project. "I don't think we feel we have been losers or winners. We simply intend to make the best out of the situation. We had a beautiful river valley for recreation and pleasure, but now we have a different body of water and we have to work to see what other recreation pleasures we can derive from that." He is sure the result will be positive: "The attitude of the people of the Pincher Creek area is that we have met the challenge very well and we'll make it work. We have had tremendous help from government in establishing facilities. Some may not work as well as planned but some will probably work better than planned."

By late 1991, with the dam completed, the LAC could look back on close to seven years involvement with one of the largest and most widely publicized projects in



"The most agonizing decision for any elected person is the placement of a public work which will require a person's home and land. This is not an easy decision. I respect and sympathize with individuals who must move because of a decision such as this, particularly where the individual and community receive no direct benefit. However, it is a fact of life, a hard one albeit, that a number of decisions of government which provide a benefit to a majority of individuals unfortunately have a serious adverse effect on a few."

FRED BRADLEY
MLA, PINCHER CREEK-CROWSNEST
IN HIS "REPORT FROM THE LEGISLATURE"
30 AUGUST 1980

provincial history. Had this mechanism for local input worked as planned? Both government and community believed it had. In Pharis's view, committee members themselves were generally satisfied with what had been accomplished: "We were breaking new ground, certainly in terms of the level of local involvement in so many aspects of the project. If I have any regrets, it's that we might have adopted a broader focus, involving more people from the Crowsnest area, for example, or encouraging environmental groups to meet with us and particularly with the sub-committees. Another regret is that we somehow never managed to bridge the gap with the Peigan Nation. That may have been due to the various legal battles going on with Ottawa. When cases are before the courts, people tend not to be so free and easy." The Band was invited to have a representative on the Local Advisory Committee — but this didn't happen, he said, "In hindsight, perhaps more effort could have been made to ensure Peigan involvement."

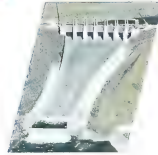
Otherwise, said Pharis, the best measure of the LAC's success lay in the co-operation received from government personnel involved with the project: "They were the developers, but we never had any feeling that they were going off in one direction and we were going in another." Government people on site were often faced with the challenge of "blending government policies made far from the field with the aspirations of local people," Pharis noted. At the same time, the fact that government/community relationships remained generally cordial throughout the project suggests that acceptable accommodations were found.

As southwestern Alberta residents absorbed the fact that their area would soon have a new water body, people who lived near the recently completed (and equally controversial) Dickson Dam on the Red Deer River were already enjoying the benefits.



FIVE

The Long-term Solution



Long-time residents of southern Alberta often present widely divergent descriptions of the Oldman River Valley. Depending on their location along the river's 443-kilometre course, they describe gently upthrusting banks and a broad and languid flow; they talk of park-like valley floors, thick with cottonwood trees beside swiftly flowing waters; or they speak of narrow rock-filled canyons echoing to the roar of rapids. A river of countless moods and faces, the Oldman presented many options for siting a major water-storage facility. In the Three Rivers site, approximately eight kilometres downstream of the confluence of the Oldman and Castle Rivers and twelve kilometres downstream from the point where the Crowsnest and Oldman join, experts agreed they had found the most suitable site for on-stream storage development. Not only would it meet the needs of all major demand points at the lowest cost, the Three Rivers site would also offer potential for power generation, flood control and recreation. Now simply called the Oldman River Dam, it straddles the river at a spot where the valley plunges abruptly away from gently rolling plains to the river some seventy metres below. Threading its way through the valley floor, the Oldman River has traditionally been about fifty metres wide at this point, running at depths of anywhere from one to three metres.

This would be the site for Alberta's fourth highest dam — and the largest project of its kind ever undertaken by the Province of Alberta. At seventy-six metres, it would be exceeded in height only by Suncor's Tar Island Dam in the Athabasca oil sands, TransAlta's Bighorn Dam on the North Saskatchewan River and the Syncrude Dam near Fort McMurray, built to contain oil-sands tailings. On completion, it would create a reservoir containing four hundred thousand



The Oldman is a river of many moods and faces, offering several options for siting the dam and reservoir. The present site was chosen for both economic and engineering reasons.

acre feet of water storage (imagine water one foot deep covering a city roughly the size of Calgary) in a reservoir stretching into the Castle and Crowsnest rivers and the north arm of the Oldman. In all, this man-made lake would be twenty-four kilometres in length and span the valley for three kilometres at its widest point. In comparison, the Dickson Dam on the Red Deer River, another Alberta government project, is thirty-nine metres high and provides one hundred and fifty-five thousand acre feet of water storage. The Paddle River Dam near Barrhead holds thirty-five thousand acre feet of water behind a thirty-six-metre-high rampart.

When government announced its final decision about the Oldman River Dam project in August 1984, it set in motion a massive program of exploration, engineering and construction that would take seven years to complete. Against a background of economic uncertainty, Alberta's engineering and construction industries were in the doldrums — and word that the massive project was a go sent a ripple of optimism through both sectors. Dave Chalcraft of UMA Engineering Limited, recalls that the late 1984 proposal call came at a “very slow” time for the industry: “That was one of the reasons that the lead consultants were encouraged to involve as many of the smaller consulting firms as possible.”

UMA itself joined forces with Acres International Limited to win the contract as consulting engineers for the dam, spillway, diversion tunnels and related works. To handle the massive job, UMA and Acres set up a consortium of ten engineering firms. As it turned out, the benefits of this approach went beyond the economic boost to the engineering community. “It was a very effective approach because each of the sub-consultants brought specific expertise to the project that no one else had,” explains Chalcraft, UMA project manager. On the other hand, he admits, co-ordinating the work of ten independent companies might have ended in organizational chaos, had it not been for the decision to establish an Edmonton project office, “Instead of just focussing work around each separate engineering package, we created an integrated project team,” he says.

Kicking off the project in addition to Chalcraft was an Alberta Environment team consisting of Assistant Deputy Minister Peter Melnychuk, Project Manager Ralph McManus (a private consultant on contract to the department) and Assistant Project Manager Walter Solodzuk, former deputy minister of Environment.

For the first couple of years, visitors to the site of the much publicized dam would be surprised to see little apparent action, beyond the exploration crews busy assessing the lay of the land. It was up to these geological and



Over the years, Albertans have invested heavily in the forestry and energy projects in the northern part of the province. In the Oldman River Dam and related irrigation works, an opportunity was provided for balanced economic growth by investing in the future of southern Alberta.

engineering sleuths to track down unusual conditions that could later cause construction problems. Behind the doors of Alberta Environment planning and engineering offices and in consultants' boardrooms miles from the site, however, work was well under way on preliminary engineering studies for the earthfill dam, spillway and diversion tunnels. Then came the delicate and demanding task of developing a project cost estimate. By 1986, the estimate was complete and the figure announced. Albertans learned they were going to pay 353.3 million dollars — in 1986 dollars — to ensure a water lifeline for a vast expanse of southern Alberta. Many considered the price justified, recalling the economic spin-offs generated by massive investment in oil sands and forestry projects farther north, but some Albertans viewed the project not as a sound investment in Alberta's future but as an unnecessary expense and a waste of taxpayers' money. Quite apart from the environmental costs involved, they said, it simply did not make good economic sense.

This was a perception that would dog Environment Minister Ken Kowalski throughout much of the ensuing five years (named minister of Public Works, Supply and Services in 1989, Kowalski once again became involved with the project,

when it was transferred from Environment to Public Works in September 1988). Assailed by critics who charged the dam helped only a handful of irrigation farmers and promised too few benefits for the buck, he was convinced there was a broader picture to consider. Viewed only in terms of the additional one hundred and seventy thousand acres of land that could now be irrigated, the dam was indeed a poor deal for Albertans, he admits. But government — and thousands of southern Albertans — expected a much wider impact:

The fact is that southern Alberta was dry and was becoming drier. You can't have any life without water. Without a constant supply of water — and by that I mean a twelve-month guaranteed flow — nothing could live, nothing would grow. That was the fundamental reason for the dam. The preservation of life — wildlife and human life — was more important than one hundred and seventy thousand acres of land for irrigation. That has been one of the most difficult things to explain ever since 1986. Anybody opposed to the dam could simply say it made no economic sense because we were just building it for a few farmers. In that context alone, it didn't make sense. But the dam wasn't being built for that purpose alone. It was for life — for the preservation of all those southern Alberta communities.

Kowalski also felt there were misconceptions about project costs. The dam — the actual earth embankment, spillway and tunnels, projected in 1980 and earlier preliminary engineering studies to cost around two hundred million dollars — was just one element of an overall project. The final cost would reflect millions of dollars for such items as land acquisition, new roads and bridges and a far-reaching environmental mitigation package, he said. Eight years later, as final costs for the project were being tallied, Kowalski confidently predicted that the total would still read 353.3 million dollars — in 1986 dollars. The only difference would be the inflation factor required to translate the price tag of the money spent between 1986 and 1992.

In the Pincher Creek and Crowsnest areas, and in communities all across the south, contractors, supply houses, service industries and job-seekers kept a close eye on developments at the dam site, anxious to participate in one of the largest projects ever launched in southern Alberta. Government had promised that local contractors would have every chance to bid on the various construction activities — or pursue sub-contract opportunities with major contractors handling



By drilling a vertical shaft and lowering geologists by cage to inspect the various levels of material in place at the dam site, engineering consultants were able to accurately determine site conditions before the start of construction. This novel method of examining foundation materials was more precise than traditional drill cores.

larger construction packages. Local companies were encouraged to register their interest in providing services, material and equipment. Forms listing company capabilities became part of a well-thumbed business inventory housed in the Pincher Creek Project Information Office. All tender packages prepared for construction contracts contained information about local firms, and, conversely, area businesses had access to lists of potential bidders who could be contacted regarding possible sub-contracts or related business.

In Blairmore, a special Canada Employment Centre file for the Oldman River Dam expanded daily as area residents came in to register for work on the project. Hundreds more contacted the project office in Pincher Creek or approached contractors directly. Those who saw a need to upgrade job skills were encouraged to consult the Chinook Education Consortium in Pincher Creek or Blairmore, and career consultation was available through Pincher Creek's Alberta Career Centre.

Looking back on the upbeat mood of a community on the edge of a mini-boom, Local Advisory Board Chairman Hilton Pharis observed, "Certainly, anyone who had a trade of any kind could get work at the dam. There were jobs for unskilled labour, and some of the farmers who weren't busy were also recruited. People were hired to do a broad range of things from cutting trees in the river valley to building dugouts. Pretty well any local person who wanted to work there had a chance to do so. The developers bent over backward in this regard." Kerry Lowe agrees: "Fred Bradley made sure there would be oppor-



This was the scene in October 1987 as preparation began for construction start-up. Over the next four years, dozens of contractors and engineering firms would apply their expertise to this large and complex project, one of the most ambitious resource developments ever funded by the provincial government

tunities for residents of this area. As well as his role as Environment minister, this was his constituency and he took a real personal interest in ensuring this region would feel the benefits.”

By December 1988, the project newsletter *Update* contained statistics that showed the area was indeed enjoying a comforting share of economic benefits from the dam. To 31 October that year, 55 per cent of the hours worked involved people who lived within a sixty-five-kilometre radius of the dam site. Local businesses had benefitted to the tune of twenty-seven million dollars, and roughly thirty construction and equipment firms from Brocket to Blairmore, Coleman to Cowley, played a role in construction.

Ralph Wallace, vice-president of Edmonton’s Mustang Engineering, the firm contracted to handle earth and rock work for the dam, recalls, “We were able to hire a number of local people — some of whom moved on to other projects with us. As well, several of our management people lived in Pincher Creek during Mustang’s three-year contract. Now, they’re living in Edmonton or Fort McMurray. They really enjoyed the area and didn’t necessarily want to move.”

Wallace agrees that virtually every available person was able to find work on the dam: “I’m speaking of people who were qualified to work on the project, of course. If we needed a bulldozer operator and you lived in the area but couldn’t operate a bulldozer — that hardly qualified you for the job.”

Among a Mustang workforce of about two hundred on the Oldman project were a number of members of the nearby Peigan Band. Despite the band’s much publicized opposition to the dam during the time the firm was working on the site, says Wallace, “We never heard these people express any animosity toward the project.”

In the meantime, the Pincher Creek Economic Development Board and area chambers of commerce joined forces with Alberta Environment to ensure maximum benefits for area communities. Anne Connellan, past president of the Pincher Creek Chamber of Commerce, later recalls that the impact of the project on local business was even more substantial than she, for one, had anticipated: “I run a flower shop, and we hadn’t really expected to benefit that much. It should have occurred to me that construction workers on a project miles from home would want to send flowers and plants back to loved ones on special occasions. The impact on our business was dramatic.”

Just how much the influx of close to a thousand people had on the town of three thousand was apparent as construction wound down. “We’ve certainly noticed a difference in our economy,” says Connellan. “However, we’re just

not sure how much was due to the end of the boom and how much to the recession in general. Both seemed to happen at once.”

Mustang’s Wallace recalls that accommodation in Pincher Creek was at a premium during the height of construction: “I visited the site about once a week, and, if I didn’t remember to phone for a motel room at least a couple of weeks in advance, I’d be out of luck. A megaproject on your doorstep is bound to have an impact. Local businesses ranging from car dealers to hardware stores can’t help but feel the difference.”

Megaprojects can have a negative impact as well, he admits, adding that perceptions sometimes outstrip reality: “I think there’s always a fear in a smaller community like Pincher Creek that there will be all sorts of goings-on when the construction crews move in. I can remember back twenty-five years — people had the same concerns then. But the dire predictions don’t generally materialize.”

It just didn’t happen, confirms Hilton Pharis: “The project didn’t have the negative impact that the alarmists had predicted in terms of gambling and crime.” Connellan agrees: “Perhaps the town was a little noisier and more boisterous than usual — but I personally never saw any detrimental effects on the community.”

A 1986 Economic Opportunities Study, commissioned by Alberta Environment, projected a peak work force of between seven and eight hundred during the summer of 1989. (Dam Operations Manager Denis Magowan would later recall as many as a thousand workers swarming over the spectacular work site at the height of construction in summer 1990.) The study showed that even in 1986, roughly one hundred and fifty jobs in administration, engineering, catering, trades and labour would be created as work got under way on an access road, camp construction and the twin diversion tunnels that would divert the Oldman River around the construction site. Part of the work force would focus on clearing land for the reservoir and relocating area roads and bridges. In this case, the consultants were Stanley Associates Engineering Limited, and construction work was handled by close to a dozen contractors.

Gradually, a small construction city emerged on the banks of the Oldman. Services were installed. Dormitories and kitchen, dining-room and recreation facilities appeared. Safety and security personnel were assembled as the camp prepared to accommodate its first two hundred workers (eventually, it would expand to house about six hundred). Even during the early months of the project, all eyes were on the calendar, as project managers and contractors counted backward



At the start of construction, a small town emerged on the banks of the Oldman. At the peak of construction activity, these portable buildings would house more than five hundred construction workers.

from an anticipated 1991 completion date. The dam was to be in place by 1990, and the reservoir complete and ready to capture the runoff in the spring of 1991. All elements of a complex schedule would have to click into place to make it happen on time and within budget. That meant launching work on the road and bridge system in 1987, working on the dam and spillway between 1988 and 1990 and making sure reservoir clearing was under way during the winters of 1989 and 1990. Kowalski and his cabinet colleagues were confident the project would be completed as planned. “We had assembled an outstanding group of people. They were real geniuses at meeting all of the challenges of a huge and demanding job and getting the job done on schedule,” Ken Kowalski says.

Despite the complexities of such a large project, government people point out that it did not represent a venture into unknown waters in terms of engineering or construction techniques employed. As Alberta Environment’s Jake Thiessen, who became project manager in 1988, would later put it, “We weren’t going to the moon here; we were just building an earth dam using well-proven technology.”

Still, recalls UMA’s Chalcroft, there were some unique and challenging aspects to the job: “At the dam site, we found thin layers of clay sandwiched between rocks and used some unique investigation methods to learn about these weaker materials.” Instead of drilling a hole and bringing up the core, the engineering team drilled vertical shafts into the material and sent down a geologist to study the weak zones. “This weaker material sometimes doesn’t survive a drilling operation. It gets washed out or lost. The ability to go down the hole and inspect undisturbed material in the ground is a great benefit to geologists. It allows them to more accurately understand foundation conditions,” he says.



As those in charge of construction would quickly learn, “getting there” would be half the fun. The first step was construction of an access bridge, here being fitted with pre-cast girders.

The shafts also allowed geologists to recover undisturbed samples of clay material and take them back to the soils lab for good quality testing, Chalcroft explained. This determined how much strength there was in the clay zones so as to resist sliding: “It’s a relatively new way to examine foundation materials and one of the first times this approach has been used in Alberta.”

As part of the exploration program, UMA also drove a test tunnel to allow for further exploration of foundation materials: “We also learned what it would be like to construct a tunnel in this material. We used different tunnelling techniques and support systems so we could illustrate to contractors bidding on the diversion tunnel what techniques we

had tried and how successful they were. They could inspect them with their own eyes and learn what they were going to be faced with." In all, 180 contractor personnel inspected the tunnel during the driving operation.

Another unique feature of the project was the decision to split the work into about thirty smaller contract packages. "This allowed more Alberta-based contractors to bid on the packages. The lower dollar values involved allowed them to get bonding and this, in turn, meant more Alberta contractors were qualified to bid," Chalcroft says. This approach also allowed the project to be designed, tendered and constructed on a sequential basis, Chalcroft explains: "We were constructing the diversion tunnels before the design was completed on other elements of the project."

By the close of 1988, onlookers had little doubt that something big was happening along the once quiet banks of the Oldman River. An aggregate processing plant and concrete batch plant were being erected by spillway contractor Pigott Project Management in preparation for work to begin the following summer. Work on the dam, under a ninety-seven-million-dollar contract awarded to W.A. Stephenson Construction (Western) Limited (one of the largest single construction deals ever signed by the Alberta government) was well under way, with 60 per cent



Tunnelling was a major activity on site as both diversion tunnels and drainage tunnels took shape. The former carried the river's flows around the dam construction site; the latter were built to handle seepage when the reservoir filled. A 100-metre test tunnel was also driven, allowing contractors to inspect the conditions they would encounter on the project.



Dave Chalcroft (left) and Don Phelps of UMA Engineering each served a term as UMA project manager during a seven-year design and construction program. They agreed the Oldman River Dam was "a good project." Says Phelps, "It wasn't shut down, there were no major strikes and no major design changes. With few exceptions, the dam and related works looked like they were designed on paper."



1. 1986 – Pile driver on the south abutment of the access bridge.
2. 1987 – Monitoring slope movement of the inlet portal, diversion tunnel.
3. 1988 – Preparing oversize rocks for blasting.
4. 1989 – Quality assurance testing was a key function.
5. 1990 – Rock excavation for the spillway chute.
6. 1991 – Pouring concrete for the spillway flip-bucket.



Riverton Construction was one of close to a dozen firms contracted to replace the transportation system around the reservoir. In August 1988, crews were at work on part of the route that leads from Highway 3 just east of Pincher Station to the dam, circles the reservoir and joins Highway 3 again at Cowley.



Stanley Associates Engineering were consultants for the reservoir and related works – which included building roads and replacing three bridges – as well as clearing the twenty-four-kilometres-long reservoir site. By November 1990, road work was well under way. Here, Top Notch Construction Limited crews are at work on a road.

of the earth and rock excavation complete. The winter would see the beginning of a massive grouting effort, as contractors injected a cement and water mixture into the foundation rock to fill voids and to prevent water seepage. In this gigantic materials moving program, nothing would be lost as dirt and rock gouged from one area were used as fill elsewhere on the site.

By now, the construction of coffer-dams (to block the river at both ends of construction and allow the dam worksite to be dewatered) and a 1.6-kilometre dyke running northeast of the dam and designed to hold back water at the lower end of the valley was near completion. Excavation of drainage tunnels was nearing an end. Twenty thousand metres of drain holes would be drilled from these tunnels into the rock to collect any water that might seep through the river bank and dam. The water would simply flow back safely into the river downstream of the dam. By year's end as well, 60 per cent of the earth and rock excavation from the site of the spillway was complete and crews were being readied to clear approximately one thousand hectares of the reservoir area of trees, brush, fallen timber and stumps.

As the great earth-fill structure began to take shape, some downstream residents expressed concern over its safety. Could an act of nature cause the dam to crumble, releasing the impounded water and flooding the valley downstream of the dam site? While some continued to question the safety aspects of the dam, eventually forcing a new round of safety hearings, others were comforted by the design and safety information released by the project team and confirmed by spokespeople for the International Commission on Large Dams (ICOLD). A body that embraces dam construction and operating personnel from most countries of the world, ICOLD put its stamp of approval on the project.

Project Manager Jake Thiessen notes that quality control specifications and standards were strictly adhered to in all critical safety-related components of the project: "The spillway is designed to pass a flood more than three times the size of any flood that has occurred near the dam site in recorded history. As well, the dam is designed to withstand the maximum credible earthquake." According to University of Alberta scientists and the Government of Canada's Pacific Geoscience Centre in Vancouver, the maximum credible is one that measures 6.5 on the Richter scale and has an annual probability of occurrence of one in ten thousand. As one project information package put it, "Factors of safety have been applied in the stability analyses for the major structures that will ensure the structures will be safe under all conceivable combinations of loads, including flood, earthquake, rapid reservoir drawdown and extreme wind. Normal factors of safety used in the design



of this type of structure are in the order of 1.3. This one has a factor of safety of 1.5.”

Mustang Engineering’s Ralph Wallace would say later that unrelenting emphasis on quality control was a memorable feature of the project, immediately apparent to contractors such as himself:

Rigid quality control standards were in place throughout the project and that, in turn, demanded a high level of performance from the contractors. If you’re designing a highway and it develops a pot-hole, you can send out a crew to fix it. If you develop a leak or a failure problem in a dam, it’s a different story. That’s why engineering firms such as Acres were on the job. They go absolutely, exactly by what the designer says. They allow no deviation to compromise the design in any way.

While the consultants employed an inspection staff of up to sixty on site to make sure contractors complied with the design and specifications prepared by the UMA-Acres team, scrutiny went beyond that. Throughout the project, a Technical Review Committee of Vic Milligan, Jim Libby, John Knowles and Tony Tawil — all experts with world-wide experience in the design of major dam projects — met more than two dozen times with the project team. As well, a Project Review Board made up of four independent, highly experienced professional engineers subjected every aspect of the project to critical review. Before the job was completed, they, too, had met close to two dozen times and participated in countless tours to inspect design and construction. Board members were geotechnical engineers Earle Klohn, Stewart Ringheim, and Dr. R.M. Hardy (who died before the project was complete), hydroelectric engineer George Eckenfelder and structural engineer Ralph McManus. Together, they reflected close to a century and a half of experience in the design and construction of dams and related works.

With work on the project virtually complete, Jake Thiessen was able to say with confidence that the dam was performing well. Supporting this conclusion was information supplied by dozens of monitoring instruments installed in the dam and spillway to track performance of the structures. He said:

“Everything has worked as planned.”

By spring 1991, the dam and reservoir were ready to capture runoff from the mountains. Pincher Creek’s Dennis Minion

OPPOSITE: By February 1991, work was well under way on the spillway. Although the spillway gates would not be installed for some months, the reservoir was partially filled later that year. By summer 1992, with the gates in operation, the reservoir was expected to reach full supply level.



had been a close observer of progress throughout the construction stage. In charge of security at the site, he was there to see a lake emerge amid the dry southern landscape: “It was magical. There was some suggestion it would take years to fill but within six weeks the reservoir was 60 per cent full.”

Dan Bader, assistant deputy minister of Public Works, Supply and Services had been closely involved with the project since 1988, when responsibility for reservoir development was shifted from Alberta Environment to Public Works, Supply and Services. Surveying the partially filled reservoir, he explained that with the installation of control gates in the spillway the reservoir would be filled to capacity in 1992: “The original target set in 1986 was to capture the 1991 spring run-off. This was accomplished on schedule through the combined efforts of literally thousands of people who were involved in the planning, design and construction of the project.”



“During construction, I was involved with a lot of technical tours that involved showing a number of foreign visitors around the site. I remember a group from Ethiopia in particular. They looked down from the east side of the valley on to the construction site. From this point, the rock trucks looked like dinky toys. There were maybe twenty pieces of machinery working on earth-fill – and their first question was, ‘Where are all the people?’ I guess from their experience they expected to see a lot more manpower on a project of this magnitude. One of the visitors asked me how much the equipment operators earned. I had no idea – but I said maybe fifteen dollars an hour. First thing I knew he was peeling off his jacket and asking, ‘When can I start work?’”

DENIS MAGOWAN
OPERATIONS MANAGER
OLDMAN RIVER DAM

In April 1992, the completed project was once more in the hands of Alberta Environment — just one component of a southern Alberta water-management system that the department owns, operates and manages. For Environment's Melnychuk, it was a moment for reflection: "It's hard to believe that we began working on this precisely twenty years ago. We thought then it was a project that would be completed within ten years. Now, two decades later, the dam is finally in place. In that time, public attitudes toward environmental matters and public participation had completely changed — and the dam was caught up in this era of change."

Operations Manager Denis Magowan was Alberta Environment's "man on the scene" throughout construction, keeping an eye on every component of a complex he and a ten-member staff would ultimately run as part of an operating program estimated to cost between three and four hundred thousand dollars annually. Significantly, he says, one senior position has been reserved for a biologist, who will oversee ongoing environmental mitigation and monitoring.

With the construction phase complete, the dam administration building has become the main centre of activity. As the central command post, it overlooks a site where natural and man-made features combine to form a landscape both serene and spectacular. Here, amid sophis-



Despite the presence of dozens of trucks, bulldozers, front-end-loaders and cranes, and the fact that as many as forty-five contractors and a spate of sub-contractors pursued their individual agendas on a single job-site at the height of Oldman River Dam construction, no major accidents occurred at the dam site proper. Sadly, one fatality was recorded on a bridge construction site, when a member of the construction crew fell to his death.

Alberta Environment Site Safety Representative Tony Fumagalli, who joined the project in February 1987, said he was once asked how many people the project was expected to kill. "I can't imagine anyone planning for even one death on an industrial project. As it was, despite all of the potential dangers and all of the activities going on at the same time, we had a good safety record."

Tour director Al Laatsch was particularly impressed with the job's transportation safety record. Pointing to the tonnes of limestone rock used to protect the face of the dam and dyke, he declared, "It was something to see those trucks rolling in with rock every three to five minutes. They worked twelve hours a day, five days a week, and they had to haul the rock fifty miles from the Crownsnest to the site. But not once was there a highway accident involving the public. It was amazing."

ticated control systems, staff make the crucial water-management decisions that will affect farm and urban communities throughout the south. “We’re not flying blind,” declares Magowan. “We rely on everything from historical data and computer models to a weather-gathering network and various river flow and precipitation gauges. All of these things help us determine how quickly the reservoir will fill and when to release water through the spillway. Our work here is similar to that of firefighters. A lot of the time, the work is routine — but when things start happening quickly as they do in the spring, you have to make a lot of fast decisions and be prepared to take action.”

If the site remains relatively quiet in winter, it is a different scene in summer. Campsites and boat launches, a swimming pond, a park for recreational vehicles and a canoe and kayak run below the dam are just some of the amenities built into the project. Along with the reservoir, which attracts boaters, divers and windsurfers, these facilities are designed to enhance recreational opportunities for local residents and attract more tourists to the area. A paved ring road from Highway 3 provides access to this newly developed playground.

SIX

The Challenges



As a civil engineer, Dan Bader had expected to concentrate on the engineering and construction aspects of the Oldman River Dam, when responsibility for the project was transferred from the Alberta Environment department to Public Works, Supply and Services in September 1988. The assistant deputy minister of Public Works would soon learn that his expectations would not be the case. “As it turned out, I spent well over three quarters of my time dealing with the legal aspects of the project,” said Bader. In late 1991, when construction was virtually complete but many legal challenges remained unresolved, he observed, “It was almost like two different projects — one the construction side and one the legal side. I am convinced that most of the problems arose because of uncertainties over environmental law in this country.”

Indeed, it was a legal challenge that indirectly brought Bader into the Oldman River Dam process. Although Alberta Environment had been granted an interim water licence by the Controller of Water Resources in August 1987, a court challenge by the Friends of the Oldman River Society (FOR), a newly formed coalition of environmental and recreation groups opposed to the dam, questioned the validity of the licence. FOR charged that the licence did not comply with the requirements of the Water Resources Act under which water rights are issued. FOR’s lawyers pointed out that Alberta Environment had neither obtained written permission from the Municipal District of Pincher Creek or the Public Utilities Board to proceed with the project nor had it alerted Alberta’s Energy Resources Conservation Board (ERCB) to its plans. It was also charged that Albertans had not had an opportunity to voice their opinions about a project that would



When environmental groups and others opposed to construction of the dam began launching legal challenges, Assistant Deputy Minister of Public Works Dan Bader found himself dealing with two separate project challenges – one the legal side, the other the engineering and construction side.



Those closest to the dam project acknowledged that legitimate questions about everything from dam safety to environmental mitigation efforts deserved to be answered. Fielding questions at a May 1991 news conference were (left to right) Peter Melnychuk, assistant deputy minister, Alberta Environment; Ken Kowalski, minister of Public Works, Supply and Services; Fred Bradley, Pincher Creek-Crowsnest MLA; and Jake Thiessen, project manager.

obviously have a major impact on the province and its citizens. According to FOR literature, the group opposed the dam because “flooding of the free-flowing waters of the Oldman, Crowsnest and Castle Rivers will be a major economic and environmental blow to Alberta.”

To the surprise of many Albertans, including Alberta Environment officials, who were convinced all the proper procedures had been followed, the Alberta Court of Queen’s Bench granted an order in late 1987 to quash the interim water licence. While government officials moved quickly to correct technical flaws in their application and obtain a new licence early in 1988, the challenge had clearly raised questions about the department’s role as both builder and licensor of major

water resource projects. “The publicity that surrounded the court challenge left the impression that the organization was in conflict,” recalls Alberta Environment’s Peter Melnychuk in late 1991. “Here I was, assistant deputy minister of Environment with both the division responsible for building the dam and the division that issues water licences answering to me. We argued that the Controller of Water Resources operated independently — as the law requires. But the perception of conflict was there.”

While Alberta Environment had been totally responsible for design and construction of major projects such as the Paddle River Dam and the Dickson Dam on the Red Deer River, the high profile of the Oldman River Dam and growing controversy over the project’s future suggested that a visible separation between the dam builders and the issuer of water licences was advisable. This realization came at a time when government was already rationalizing its operations, measuring what the various departments were best equipped to do. Reservoir development, it appeared, would fit well with Public Works, Supply and Services.

When Premier Don Getty announced on 7 September 1988 that construction of all major government-owned dams would be transferred to Public Works, he noted that the transfer included responsibility for preparation of budgetary requirements, engineering services, final environmental impact assessments and mitigation works. Alberta Environment would continue its responsibility for managing water resources, including river-basin planning, and administration of the Water Resources Act, including licensing. It would also continue to maintain and operate multi-use water-management systems throughout the province.

For Environment’s Jake Thiessen, who had succeeded Ralph McManus as project manager in May 1988, the transfer meant secondment to Public Works to help with the transition: “My original secondment was for six months, but as it turned out I stayed with the project for more than three years.” He recalls the impact of FOR’s 1987 court challenge (the first of more than a dozen court cases involving the dam and related environmental matters that would engage government’s Oldman River Dam development team well into the 1990s):

There was a great flurry of activity when the challenge was launched. Lawyers pored over the records to see if government had met all the requirements of the public participation process. Then, when the court

said the licence was invalid, all hell broke loose! Contracts had been awarded, the design was done and a tremendous amount of work had already gone into this project. The project made headlines everywhere. In the end, we decided to go through the whole process of getting a new licence, by giving the proper notices and obtaining the appropriate permissions. This time, we were determined that all of the i's would be dotted and t's crossed.

“Quite frankly, we didn’t know that we were required to issue a licence to the government, allowing them to flood a municipal right-of-way,” Tom Ferguson, reeve of the MD of Pincher Creek, later explains. “We weren’t aware they required it until the court case got into the Municipal Act. It wasn’t something we had in our municipal by-laws.”

Although government was never ordered to abandon the project and preparatory work continued, some delays occurred. “Because it was winter, there wasn’t much happening at the site,” says Thiessen. “We had opened tenders for the main dam structure in October but did not award the contract until after the new licence was processed in February 1988. I never sensed that the dam wouldn’t go ahead. A lot of work had already gone on, and the Friends of the Oldman River came very late into the game. The public participation process had been going on since 1974 — but it wasn’t until 1987 that this group was formed and began its legal challenges. Certainly, we were aware that not everyone, even in southern Alberta, supported the building of a dam.”

At the helm of Public Works at this time was Minister Ernie Isley. By late 1988, his counterpart in Environment was Ken Kowalski’s successor, Dr. Ian Reid. At this point, all major contracts for the dam had been let and



By 1988, with the dam project caught up in a swirl of negative publicity and court challenges, then Public Works Minister Ernie Isley and local MLA Fred Bradley visited the site to assure contractors the project would continue.

Isley told Albertans, including contract holders understandably concerned about the future of the project, “I can assure you that the Oldman River Dam project will continue as planned. Objectives and commitments made in the past remain, and we will continue to work toward attainment of those goals.”

Meanwhile, the new Environment minister toured southern Alberta and came away convinced of the “significant role” water management played across the south. Quoted in *Update*, the project newsletter, Reid said, “I am especially impressed by the diversity of uses supplied by the irrigation systems. The water they distribute is used for municipalities, industry and recreation, as well as for the creation of wetlands for wildlife.”

For Ken Kowalski, it was a time of frustration. A Cabinet shuffle in the fall of 1988 saw him shifted from the Environment post to that of minister of Career Development and Employment. “There was a period of six months in which the dam left me. I was a little bothered by that,” he says. Admittedly strong-willed and stubborn, the outspoken Kowalski was seen by some in the media as over-confident. Now, headlines blared, “Kowalski Bumped,” “Kowalski Dumped” and a spate of similar messages. For months, the subject of the stories remained uncharacteristically quiet, forced to bite his tongue and endure what he later described as some of the most vitriolic comment to come his way throughout the entire Oldman River Dam exercise. After the 1989 election, he was appointed minister of Public Works, Supply and Services and was once again in charge of the dam.

While separating Environment’s roles as both client group and approval group tended to lower the profile of the Oldman River Dam in some quarters, the court challenges would continue. For Public Works’ Bader, the opposition, while troublesome, was understandable:

People in general simply don’t like dams. As well, we appreciated that dam opponents did have some legitimate concerns. We couldn’t deny there would be some definite impact, that the length of the stream would be lessened and that some people would have to move. But actual opposition came from a relatively small number of people. Everyone loved the beauty of the river valley. But most people, once they had come to terms with the idea of the dam and what it was designed to do, bought into something they saw as a benefit to all of southern Alberta — something that would allow this region to survive and prosper in the long term.

The Friends of the Oldman River clearly did not share this view. In Dr. Martha Kostuch, a vocal and articulate veterinarian from Rocky Mountain House, environmentalists and others opposed to the dam had found a strong and aggressive advocate. As FOR spokesperson, she led a determined battle to stop the project — and, in the process, encouraged public examination of many environmental and safety issues related to the dam. Area residents would later admit that, although they did not support the environmental group, they felt the critical spotlight on the dam had strengthened their position in negotiations with government. As one area resident would later observe, “All the attention ensured government’s unwavering attention to every aspect of the project — from new roads and bridges to environmental mitigation.”

Not every FOR challenge to the dam was successful in the courts. Attempts to quash the government’s second interim water licence, for example, proved unsuccessful. Similarly, a call to the courts to demand ERCB hearings on the dam as a hydro-electric development was dismissed. In this case, the court ruled that even though the dam was designed for the future installation of equipment to generate power, this did not mean it was a hydro-electric development. Undeterred, FOR continued its fight against the dam, challenging the project next under the federal Fisheries Act and, later still, under the federal Navigable Waters Protection Act.

Following their victory in the Federal Court of Appeal, FOR applied to the Court of Queen’s Bench of Alberta for an injunction requiring the Alberta government to stop construction of the dam. In May 1990, the Court refused to make any order interfering with the construction of the dam because the Navigable Waters Protection Act gave the federal transport minister the power to make such orders, and, in this case, the federal transport minister had stated that he would not be making any order but would be monitoring the situation on an ongoing basis. In March 1992, FOR appealed to the Court of Appeals of Alberta, which dismissed the appeal because it agreed with the decision of the Court of Queen’s Bench.

In spring 1989, FOR filed a motion in federal court to have a federal government approval for the dam quashed and a federal environmental assessment review launched. When the court ruled against the motion, the group launched a successful appeal and the review was ordered, even though the dam was about 70 per cent complete. Although the Alberta government had argued before the Supreme Court of Canada, among other things, that the federal government did not have jurisdiction in provincial projects, the court ruled in January 1992 that the federal government had both the right and the

responsibility to conduct environmental reviews of federal aspects of major projects anywhere in Canada.

Caught in an era when environmental guidelines were in the process of becoming environmental law, the project came under increasing scrutiny. Had a full-fledged Environmental Impact Assessment (EIA) been done? The Alberta government considered it had met all of the requirements of a formal EIA through the extensive studies commissioned during the 1970s planning phase and the hearings hosted by the Environment Council of Alberta. Many years later, a federal review panel would agree that the studies conducted by the province and its consultants comprised more than two and a half times the information required under current EIA requirements. The problem, it appeared, was that the EIA had to be done by the federal not the provincial government. As Peter Melnychuk would later put it, “Maybe we should have taken excerpts from all of that roomful of studies and packaged them under the title ‘Environmental Impact Assessment.’ When I see all the costs and duplication involved in a second federal environmental review, I can’t help thinking that’s what we should have done.” Ken Kowalski looked back to his term as Environment minister and also wrestled with the past:

The Oldman River Dam was thoroughly researched, to the point of having the Environment Council of Alberta hold hearings. Should we have somehow packaged all of that information differently? I’ve asked myself that question once a month for the last sixty months. There’s been a lot of soul searching about why didn’t we do it this way or that way. Hindsight is wonderful, but the demands were always so contradictory. At one point, people were opposed for this reason; at another time, they were opposed for another reason. I have a difficult time trying to figure out how we could have done it better. People were opposed because they really strongly believed in their cause and there was no way of convincing them otherwise. The commitment on the part of government was just as strong. Although we didn’t agree, I respected groups like Friends of the Oldman River for the position they took.

At the same time, he remains convinced that the decision to proceed with the dam was a good one: “There was a need; it made sense; it was well researched, well developed and based on a very sound proposal.”

The Oldman River Dam was not the only project to spotlight the thorny question of provincial and federal jurisdiction in matters of the environment. In 1989, a bewildering procession of judgements and appeals related to the



Even the most ardent dam supporters demanded a strong commitment from government that everything possible would be done to protect the environment during the construction and operation of the dam. A massive mitigation program was designed to protect fisheries and wildlife resources and vegetation throughout the project area.

Rafferty-Alameda water-storage projects in southern Saskatchewan's Souris River basin had also attracted widespread publicity. Finally, the courts established that the project should have been subjected to a full federal environmental review with public hearings. By the time the court wrangling was out of the way, however, the dams were on their way to completion and, for safety reasons, work was allowed to continue.

The experience of the Rafferty-Alameda and the Oldman River dams reflect Canadians' growing concern with environmental protection. The Supreme Court of Canada said that the power to make laws about the environment belongs in part to the federal government and in part to the provinces. Some analysts suggest that the environment is simply too big and too important an issue to be addressed by a single jurisdiction. They predict that in future both federal and provincial governments will have to work together in assessing the environmental implications of all major developments. (In the case

of the Oldman River Dam, the Supreme Court had determined that the federal minister of transport should not have issued approval under the Navigable Waters Protection Act without first applying the federal environmental assessment process to the project.)

While environmentalists rejoiced about the court ruling, governments and legal analysts across the country tried to sort out the full meaning of the Supreme Court decision. Clearly, it had wide-ranging implications for developments everywhere across the country. Even before the Supreme Court had made its position known, the federal government announced that an Oldman River Dam Environmental Assessment Review Process (EARP) panel would hold hearings throughout the province. In June 1991, the panel scheduled public hearings in Lethbridge to deal with dam safety and design. In November, the focus was on the environmental and socio-economic impact of the dam, with meetings held in Brocket, Pincher Creek, Picture Butte, Lethbridge, Medicine Hat, Calgary and Edmonton.

Although some questioned the relevance of an environmental review of a virtually completed project, panel chair Dr. William Ross, professor of environmental science at the University of Calgary, said in a November 1990 news release, "Completion of the dam, now 80 per cent finished, will not make any material difference to the nature of the enquiry being undertaken by the panel nor to the recommendations expected to flow from its work." The purpose, according to federal Environment Minister Robert de Cotret, quoted in the same release, was "to conduct an independent review and to recommend appropriate mitigative measures." The Alberta government, whose objections to federal intrusion into a provincially funded project were before the Supreme Court, did not take part in the EARP hearings, beyond providing information and technical background on the dam and related matters to panel members.

While a final report encompassing the second round of hearings was not expected before late spring 1992, the federal government wasted little time in pronouncing on the safety aspects of the dam. On 15 July 1991, the federal ministers of Environment, Transport and Fisheries and Oceans released the panel's interim report. Their assessment: "The dam has been designed to high Canadian and international standards, and the dam's safety performance to date is entirely satisfactory." In terms of mitigative measures, the panel recommended greater emphasis on emergency preparedness for residents below the dam, including members of the Peigan Band; consideration of global warming issues in relation to spillway design; and long-term measures to monitor and report on performance of the dam.



More than a dozen studies were completed about the impact on wildlife from the effects of building the dam and reservoir. Extensive mitigation planning addressed the concerns of these studies.

Then, on 21 May 1992, the EARP panel report on the environmental and socio-economic impacts of the dam was released, recommending that the dam be decommissioned “by opening the low-level diversion tunnels to allow unimpeded flow of the river.” The federal government rejected this primary recommendation, stating in a news release that, “we are confident, based on the evidence presented to the panel, that environmental impacts can and are being mitigated effectively.” Federal ministers instead chose to work with the province to address the other report recommendations within the context of the already established mitigation program.

The FOR society continued its challenges to the dam, and another group spoke out in opposition. The Peigan Indian Band, whose reserve lies ten kilometres downstream of the dam, also began action against both the federal and Alberta governments, claiming that the Band’s aboriginal rights gave them jurisdiction over water in the Oldman River. As construction activity wound down at the dam site, the matter was still before the courts.

During the late 1980s, many issues would be raised by the Band, including concern that flooding of the reservoir would destroy religious sites sacred to the Peigans and would affect traditional hunting grounds on their reserve. In 1986, the Alberta government agreed to provide seven hundred and fifty thousand dollars to the Band council to conduct an independent study of the impact of the project on the reserve and its people. They were also given access to various studies and technical data and to the government departments and personnel who could help them complete their study. On 19 February 1987, the report, outlining Peigan concerns about everything from irrigation and surface and groundwater considerations to spiritual and cultural matters, was presented to the minister of Environment.

“The Peigan people raised the issue of their spiritual grounds which was a very sincere position on their part — one that I have a great deal of empathy for,” commented Kowalski. “That’s why we spent so much time making sure, in terms of the historical mitigation side of it, that we would not have an impact on such sites. To me, the historical, cultural Native issues were very, very important. It was understood that we would deal with the greatest degree of dignity and

understanding with those issues and make every effort to comprehend the position of the Peigan people.”

Many of the Peigan concerns about the dam appeared to be satisfied through consultation with government, but not all Band members were prepared to allow construction to proceed without a show of disapproval. To protest the dam, a group of Peigans belonging to the Lonefighters Society, named after a historic warrior group, attempted to divert the flow of the Oldman River around the LNID weir located on reserve property. In one of the more colourful chapters in the Oldman River Dam story, the Lonefighters’ leader Milton Born With A Tooth and his followers were featured in nightly television news reports. Prominent among the electronic images was the bulldozer used by the Lonefighters to cut a new channel for the river. Intended to redirect river flow around the diversion weir, it would cut off water to farmers and communities served by the Lethbridge Northern Irrigation District water supply system.

This drama was played out on the reserve during August and September 1990. At one point, RCMP officers were brought in to shepherd Alberta Environment workers to the weir site, while both federal and provincial politicians were drawn into the fray. And while the television images clearly remained in Albertans’ minds, many would later admit they thought the confrontation was taking place at the dam site rather than thirty-eight kilometres downstream at the LNID diversion weir.

Despite concern over the highly publicized Lonefighters resistance to the project and fears in some quarters that the dam itself might be a target, the Lonefighters’ visit to the dam site proved a relatively quiet event. Dennis Minion, a



During late summer 1990, television news programs focussed on the drama taking place at the Lethbridge Northern Irrigation District weir. Located on the Peigan Reserve, downstream from the Oldman River Dam, it was the subject of a blockade by members of a Native group called the Lonefighters Society. Attempts to divert the river around the weir and cut off water to farms and communities downstream proved unsuccessful.

twenty-year RCMP veteran who headed security at the site, recalls, "There was no problem. We simply opened the gates and Milton Born With a Tooth and some others walked less than a kilometre to the dam and blessed the water. There was some drumming, and a sweetgrass ceremony took place on the dam, as the media recorded the event. There was no damage, and I was convinced there wouldn't be. No one is going to do something illegal in front of the TV cameras."

Beyond the odd peaceful demonstration at the gates and one threatened blockade of the entrance to the Oldman River Dam (which, according to Minion, drew eight members of the press and only seven demonstrators), the site remained relatively quiet, the peace broken only by the men and equipment who pushed ahead to meet their demanding schedule.

Dave Chalcraft, project manager with UMA-Acres, prime consultant for the dam, later recalled that despite a flood of challenges that would follow FOR's original court case, contractors and workers remained "unaffected by the turmoil that appeared to be going on around us." He adds, "As far as work on the site itself went, we never had a day lost due to a court decision, media coverage or environmental or Native demonstrations. The only interruption came when the licence was declared invalid and we delayed awarding the main dam contract until February 1988. It meant we had to accelerate the work later to make up for lost time."

Not all of the challenges came through the courts. From the 1970s onward, burgeoning clipping files in Public Works and Environment offices attested to the newsworthiness of the project. Editorialists and reporters, television newscasters and radio commentators kept a close eye on the brewing controversy, taking stands that ranged from broadly supportive to unabashedly hostile. Those closest to the project began to sense a trend among their critics. "The farther away you were, the more critical you were," said Dan Bader. "In southern Alberta we found the media to be relatively objective and positive, while Calgary and Edmonton tended to go on the negative side. This probably had something to do with the media in southern Alberta being more attuned to the need for water management there." If public opinion was shaped by media coverage, he says, only a visit to the area would reveal the true picture: "Although I had lived in Alberta for a dozen or so years, until I became involved in the project I had no idea how important water was to the south. It came home to me when I saw the abrupt change that occurs as you move from desert to lush green along the irrigation canals."

Articles like those in *Harrowsmith* and *Trout Canada* linked Alberta's water-management system as a whole to an apparently secret government scheme to export Alberta water to the United States. Friends of the Oldman River also shared

the belief that a grand plan was in place to sell Alberta water to locations as far away as southern California. Cliff Wallis, president of the environmental lobby group, told the federal review panel examining the socio-economic and environmental aspects of the dam that the project did not make sense as a stand-alone item. Quoted in the 13 November 1991 *Edmonton Journal*, Wallis said, “The government, I think, is being less than honest with the public in saying, ‘We’re not advocating it.’”

The idea of inter-basin transfers took root in the late 1960s when the Social Credit government of the day in Alberta considered — but failed to adopt — a plan called the Prairie Rivers Improvement, Management and Evaluation program (PRIME). While opponents insist that PRIME remains a shadow reality in provincial government’s future plans, the charge has been repeatedly denied. “That concept died in 1971 when the present government came to power,” confirms Environment’s Peter Melnychuk. “In any case, it was simply a concept, a planning idea. It arose from studies by the federal, Alberta, Saskatchewan and Manitoba governments in the 1960s. They were looking at all sort of options to secure water supplies for the southern prairies and one of those options was to move water as needed from the north. None of the governments involved, even at that time, officially endorsed that concept.”

In 1981, then-Premier Peter Lougheed denied any plan to transfer water from one river basin to another in Alberta. As Minister of the Environment, Ken Kowalski delivered the same message in 1988. Since then, current Environment Minister Ralph Klein has insisted that Alberta’s water is not for sale and that new water resources laws will underscore that fact. In early 1992, Kowalski reiterated government’s position: “Every policy our government ever put out made very clear the export of water from Alberta can’t be done and won’t be done. In



Both proponents and opponents of the dam turned out for an early June 1989 concert-cum-protest, where celebrities entertained and made a pitch for preservation of the Oldman River Valley. Held at the Maycroft campgrounds north of Lundbreck, the event drew thousands to hear some of Canada’s top singing stars and listen to an environmental message from geneticist and media personality Dr. David Suzuki.



While controversy over the dam continued, it was business as usual at the site. As contractors toiled to meet their deadlines, UMA Project Manager Dave Chalcraft observed that the project remained "unaffected by the turmoil that appeared to be going on around us." When the safety of the dam was challenged, a federal review board quickly confirmed that it had been built to the highest international standards.



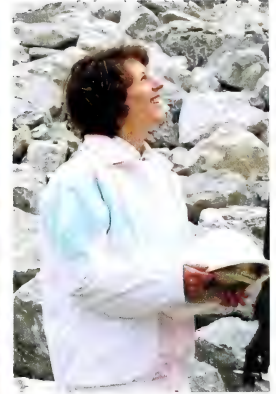
As the reservoir filled in May 1991, even sceptics were forced to admit that the dam clearly held water. And despite the controversy, many area residents saw the water body, with its endless possibilities for recreation, as a fair trade-off for the loss of prized river valley land.

fact, the export of natural water out of Canada is prohibited.”

Even the staunchest dam proponents welcomed one high profile challenge to the project. On a warm summer Sunday in June 1989, some of Canada’s top musicians and environmental spokespeople gathered in a concert and rally to protest the building of the Oldman River Dam. Among the thousands who showed up at a recreation site at Maycroft, north of Lundbreck, were dozens of dedicated dam opponents and a lot of music-lovers who welcomed a chance to hear such Canadian superstars as Sylvia Tyson, Ian Tyson and Murray McLaughlan — in concert in their own back yard. Delivering a plea for preservation of the river in its natural state was Dr. David Suzuki, prominent Canadian writer and environmental scientist.



The barren moonscape that greeted visitors at the height of construction would soon disappear under grass and hundreds of thousands of planted trees. Site reclamation was an important part of the project.



Communications Director Jan Berkowski of Public Works, Supply and Services looks in awe at the mountain of limestone trucked to the site to protect the dam and dykes. Tonnes of rock, cubic metres of concrete and kilometres of road were just some of the statistics communication specialists wrestled with in keeping the public up to date on the progress of the project.



Getting to Cowley

Part of a continuous road system around the Oldman River Dam reservoir, the Crowsnest River Bridge presented engineers and contractors with a unique challenge. In this location, winds of up to 150 kilometres an hour can smash river icepack against bridge piers with impressive force. To address the problem, Stanley Engineering Consultants selected tapered cylindrical piers to minimize the cross-section of piers against which ice forces act.

The bridge's precast girders, fabricated and erected by Conforce Constructors for Mustang Engineering and Construction Limited, are the largest ever fabricated and erected in Alberta. The fifty-six-metre-long and three-metre-

deep girders were made continuous by means of post-tensioning with cables.

For the Alberta Research Council, the unique combination of high wind and varied elevation of ice forces at the Crowsnest Bridge (due to changing reservoir levels) presented a valuable research opportunity. Working in co-operation with Alberta Public Works, Supply and Services, scientists have installed sensors in the piers to detect stresses due to ice loading. A permanent monitoring system will record forces over time. Information gathered from the Crowsnest Bridge site will help determine bridge design in the future.

The enhanced roadway network has been welcomed by area residents. "We've been waiting a long time for this," said Howard Davis, municipal councillor and chairman of the transportation sub-committee of the Local Advisory Council, as he saw the final links in the system being completed in early 1992. "This dam has been talked about for thirty or forty years – but because of uncertainty over the location of the dam and reservoir, decisions on roads and bridges were always put on hold. Before, you could scarcely find a half mile of paved road throughout the whole district. Now, we have a great transportation system." Without the ring road, Davis says, people living on the north side of the reservoir would be cut off from the community of Cowley.



Speaking of weather

Construction workers who were veterans of far northern projects delighted in southern Alberta's moderate winter temperatures and the chinooks that rapidly melted periodic snowfalls.

Jack Riley of the UMA Contract Administration Office, recalled that in five years of commuting to the site from his temporary home in Blairmore he was only held up once by snow. "Of course, the winds were something else. We only had three trailers blow over, which wasn't too bad, but sometimes the wind was blowing so hard we couldn't operate the tower cranes. When you couldn't see for dust, construction had to be shut down."

"I understand the concert was a huge success," said Reeve Tom Ferguson, of the Municipal District of Pincher Creek, adding there was one slight irony involved: "The organizers had failed to get a permit from the MD to hold the event. However, they did a good job of cleaning up and met all the rules and regulations, so we didn't get ridiculous and drag them through a court process."

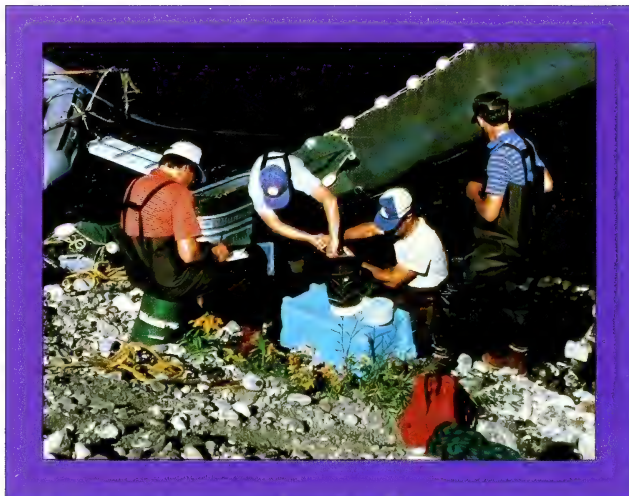
While opposition to the dam attracted the bulk of publicity in what Ken Kowalski would later charge was "very unbalanced and very unfair" media coverage of issues related to the Oldman River Dam, a group of dam supporters who had remained largely silent following government's decision to proceed with the dam eventually decided it was time to speak out. Lethbridge Alderman Don LeBaron, chairman of the Southern Alberta Water Management Committee, headed a delegation of southern Alberta business people, municipal politicians and academics, all forceful spokespeople for a project they saw as essential to the future well-being of southern Alberta. The group met with the media and politicians in Edmonton and Calgary in an attempt to explain the importance of the project. At the height of court challenges over the safety and environmental integrity of the project, a delegation

journeyed to Ottawa to talk to politicians of every stripe, encouraging them to come and see what the debate was all about. “I think we were eminently successful. The Members of Parliament had heard so much about concerns related to the dam — but our side of the story had failed to get through. The attitude in Ottawa was that maybe the dam could be stopped. We needed to let every party know why the dam was being built and how much support there was for it in southern Alberta. Finally, a press conference in the National Press Gallery gave us good coverage throughout Canada,” LeBaron says.

Ralph Ferguson, former Liberal federal minister of Agriculture accepted an invitation to tour the dam site and talk to scientists and others who supported the project. LeBaron later recalls, “Ferguson went back and wrote a report that said the project was needed, that it made sense and that the mitigation programs people had been asking for were already under way. Until we got vocal, I don’t think anyone realized what awesome support there was for this dam.” While the delegation lobbied politicians in Ottawa, a key figure in the debate, federal Environment Minister Lucien Bouchard made a trip to southern Alberta. By this time, there was strong speculation in many quarters that the federal government would call a halt to the project. Ultimately, although the court cases continued and a federal environmental review would ultimately be conducted, the minister returned to Ottawa with a clearer picture of the dam and its implications — and no order to stop construction was ever issued.

Dr. Jim Byrne, director of the Water Resources Institute at the University of Lethbridge and a member of the southern Alberta delegation to Ottawa, would later sum up,

As the dam progressed, I became increasingly vocal in saying, “Let’s just proceed. We have something here with an economic value that increases by the day.” Certainly, there was a sacrifice of twenty or thirty kilometres of river and there were clearly losses in the area of the reservoir, but we mustn’t forget the seventy to eighty kilometres downstream of the dam which are economically and environmentally better as a result of the dam. If you talk to a lot of people about this sort of project, you are bound to find flaming proponents and flaming opponents. Like many people, I have tried to come down on the side of reason. Without the dam, irrigation would be limited to what we have had in the past. And beyond that, I believe a secure supply of quality water will bring many long-term benefits to southern Alberta.



As part of a long-term fisheries habitat enhancement program, crews measure the length and weight of fish collected at an enhanced river section on the Crowsnest River. After biological data have been collected, fish are allowed to recover in a tub of fresh water, then are released back to the river.

SEVEN

Preserving, Enhancing the Environment



While men and equipment shunted dirt, moved mountains of rock and poured tonnes of concrete for the Oldman River Dam, a dozen or so smaller projects were quietly going on at the periphery of the job site. In area rivers affected by the reservoir, pools were being excavated and structures such as boulder gardens and rock weirs were taking shape as humans painstakingly created fish habitat. Below the dam, rock berms were built along river banks, and boulders were placed in a channel dug to create a challenging world-scale canoe and kayak slalom run. Fences were erected to protect wildlife habitat and keep grazing cattle from the reservoir. There was even an element of home construction, as riverside cliffs were carved with holes to accommodate prairie falcons moved from similar cliffside homes by rising waters in the reservoir.

While hardly as high profile as the dam-site scene, these bits and pieces of apparently unrelated activity formed part of one of the most ambitious environmental mitigation programs ever undertaken in Alberta. And according to many observers, including local residents and environmental experts, it is these extra touches that in the long term will spell the difference between ecological disaster and a liveable and enjoyable environment, where enhancements in one area make up for the unavoidable impact of a major resource development in another.

Ron Middleton, manager of the historical resources and recreation mitigation program, gives his definition of



Following a May 1991 tour of the Oldman River Dam site, both government developers and community representatives appeared pleased with what they saw. Enjoying a laugh at the conference table were (upper photo) Pincher Creek Mayor Eldred Lowe flanked by Local Advisory Committee members Howard Davis (left) and George Huddleston; (lower photo, left to right) LAC member Eldon Erickson and Chairman Hilton Pharis, Deputy Minister Ed McLellan and Minister Ken Kowalski, Alberta Public Works, Supply and Services.



"There was some concern about the loss of prairie falcons at the dam site, but thanks to the fact that new homes have been made for them in the cliff walls, the number of falcons has increased noticeably. The same can be said for deer. In fact, the wildlife specialists have done such a good job of looking after the deer that you now see herds of twenty or more near the dam site. They are surviving very well.

The dam may not have been necessary for our own local economy, but I believe most people in this area realized it was important to think about the economy of all of southern Alberta. When there was some talk of stopping construction of the dam for environmental or other reasons, an elder from the Peigan Reserve said to me, 'It's gone this far, now let's finish it. Let's hear the water.' I thought that was a very common-sense, down-to-earth position. It's one I think most of us in this area would support. It will be interesting to see what the dam will mean to us in future."

Eldred Lowe
Mayor of Pincher Creek

what has engaged himself, his government colleagues and dozens of consultants and community representatives over the past several years: “Mitigation refers to those things you can do in a project to avoid adverse effects or to reduce adverse effects or otherwise compensate for the loss.”

Even as the Alberta government released its 1984 decision to proceed with a dam at the Three Rivers site, plans to deal with the environmental impact of the water-management project were in the works. Not all the planning took place in government offices. In Pincher Creek and area, where residents were fiercely proud of the distinctive landscape of the Oldman River Valley, interest groups were mobilizing to express concerns over the loss of some of Alberta’s best trout-fishing waters, the threat to valuable wildlife habitat and the uncertain fate of a diverse range of resources that chronicled the area’s colourful history. At the same time, Alberta Environment, working with other government departments, was pulling together all the threads of an ambitious Environmental Mitigation/Opportunities Plan.

The catalyst that brought these two efforts together was the Oldman River Dam Local Advisory Committee. Appointed by Environment Minister Fred Bradley in 1985, the committee and its sub-committees focussed attention on matters ranging from recreation, transportation, agriculture, social and land use to historical and archaeological resources and fish and wildlife resources. In co-operation with various government departments and consultants, this citizens’ group would play a vital role in a mitigation effort that encompassed all areas of local concern.

Close working relationships developed between the committees and government mitigation staff, Middleton recalled:

A government resource person was assigned to each of the sub-committees working on environmental mitigation. On the historical resources and recreation side, for example, every step of the way we would take our thinking to committee members, sharing inventory reports and giving all the information we had. We reviewed our draft reports with them and all of our thought processes. Once we got to a certain stage in our mitigation work, the local advisory committee would present the information to larger public gatherings. At no time did we consider that the committee members were “the public.” As a consequence, we found that after six years or so of working in the Pincher Creek community, we had a very well-informed public, one that understood what we were doing. I believe we have also engendered a certain amount of goodwill because we’ve made promises and we’ve kept them.

By 1990, the mitigation story being relayed to the public was becoming increasingly exciting. Sports-minded readers of the project newsletter *Update*, for example, could anticipate the “white water, eddies and pools” being created in the canoe and slalom run, with sections designed for both the accomplished paddler and the novice. Useable at times when low flows close most southern Alberta rivers to canoeing and kayaking, the run would become a favourite destination for river sports enthusiasts.

Elsewhere on the site, Cottonwood Park, a 120-acre day-use facility with picnic spots, beach and swimming pond was taking shape, while upstream, at the Island View Recreation Area near the confluence of the Oldman and Crowsnest Rivers, protected picnic sites and a boat launch, designed to be useable at all water levels, would be the main attractions.

On the Castle River, enhancements included a trout pond, a bird-watching area and one of several boat accesses to the reservoir. Later, the former construction camp would materialize as a modern and fully serviced recreational vehicle park with 166 stalls.

Another benefit from the dam came on the historical resources side. Because the dam was being built, teams of consultants were hired to excavate dozens of sites, including one that showed evidence of Native occupation of the area dating back some ninety-six hundred years. At another prehistoric



Environmental mitigation was a favourite topic at project open houses such as this. Fiercely proud of the distinctive Oldman River Valley, southern Alberta residents wanted assurances that the Oldman River Dam project would not permanently damage the area's environment.



In late 1989, Mitigation Manager Ron Middleton displayed an artist's rendering of one of several recreation sites that would emerge along with the completed project. Day-use facilities, beaches, campgrounds, a swimming pond and picnic spots are among the attractions guaranteed to appeal to both residents and tourists.



A world-class canoe and kayak slalom course has been built downstream of the spillway. Giant boulders from the site were used to add challenge to the course for white-water enthusiasts. By combining project construction with the development of recreation sites, government gained extra clout from its construction dollars.





Sailboats on the prairies? One keen-eyed observer claims southern Albertans own more sailing craft than Canadians in any other region. With a new water body – and challenging wind conditions to attract the experts – the Pincher Creek area is expected to become a prime destination for sailing buffs.



This Doukhobor barn – a reminder of a colourful era in southern Alberta settlement – was saved from flooding and moved to the Pincher Creek Museum. As part of the largest historical resources mitigation program ever undertaken in Alberta, archaeologists, palaeontologists and historians have combined their talents to highlight and preserve the area's rich and varied past.

(before European contact) campsite near the confluence of the Oldman and Crowsnest rivers, excavations uncovered thirteen layers of occupation representing four distinct Native cultures. Between 1985 and 1991, dozens of discoveries of bison kill sites, bone beds, tipi rings and cairns tracked the movements of Native people who used the valley for winter camps thousands of years ago. Of 314 prehistoric period sites identified, 170 were within the reservoir. These fascinating archaeological studies occupied not only some forty professionals but also volunteers. A Volunteer Archaeology Program annually attracted dozens of enthusiastic history buffs to the area from all parts of Alberta and British Columbia. From teenagers to senior citizens, they helped add new dimensions to the jigsaw puzzle of the past being pieced together near the project site.

The era of European settlement in the Oldman River Valley was dominated by activities such as ranching, farming, industry and Doukhobor settlement. During the late 1980s, historians made detailed studies of the area, inventorying forty-six historic period sites, combing through archives and recording the memories of long-time area residents. An illustrated history book of the Oldman River Area from 1787 to 1939 was published in 1992 and many aspects of the cultural and natural history of the valley are documented on video.



At this pilot project on the Crowsnest River in September 1987, fisheries experts prepared to test a variety of habitat enhancement techniques before implementing them on a larger scale. Here, pre-cast concrete units are being installed along the bank to provide overhanging cover for trout.



With improved water quality and flow downstream of the dam, biologists hope to encourage development of a trout fishery in the newly stabilized waters of the Oldman River. In future, anglers may be able to test their wits on brown trout such as this beauty, taken from the lower Crowsnest River.

Not all of the familiar landmarks were swallowed by the reservoir. Some buildings, including a Doukhobor barn, found new homes. The Verigin barn and bath house were moved to the Pincher Creek Museum, authentic reminders of early Doukhobor settlement in the area. The Walsch farm house and the Maloff family barn can now be viewed at the Oldman River Antique Equipment and Threshing Club. Another structure, the foundation of the Easterbrook house, will be visible only to those adept at scuba diving. Submerged in a deep section of the reservoir, it will become a unique experiment in underwater preservation. Treated with various preservatives, the wood, brick and stone remnant of the structure will be monitored by the Alberta Underwater Archaeological Society over a period of ten years. The goal is to learn more about the preservation of artifacts in freshwater sites.

Although some years earlier the remains of *Tyrannosaurus rex* were found in the reservoir area, studies by palaeontologists prior to dam construction uncovered no such thrilling finds. "There was some reason to believe in advance that we might find something significant, but, after looking at all the bedrock strata, palaeontologists felt further work was not indicated," Middleton explained. "However, in excavating for a diversion tunnel, contractors found a fossil that turned out to be part of a plant root. It was just another

small piece of a very large puzzle and, like the earlier dinosaur find, it's now in the Royal Tyrrell Museum of Palaeontology at Drumheller."

While history buffs kept close watch on the treatment of the area's historical resources, sportspeople were equally vigilant since the area around the dam and reservoir was well known for its trout-fishing waters and significant populations of wildlife. The team in charge of fisheries mitigation was handed a challenge from the outset, admits John Englert, who headed the fisheries mitigation program: "Government made a commitment to no net loss of recreational fishing opportunities because of the project." Although flooding of the reservoir wiped out part of a blue-ribbon trout stream in the lower part of the Crowsnest River and other popular fishing sites on the Oldman and Castle rivers, government personnel, consultants and members of the community fish and wildlife sub-committee wasted no time making up for the loss. Pilot projects on the Crowsnest began in 1987 to evaluate a variety of habitat enhancement techniques including boulder gardens, flow deflectors, bank stabilization, rock weirs and pools. By 1989, two major enhancement projects were under way on the river below Lundbreck and at Blairmore. By 1990, bank armouring and excavation were under way on a stretch of the Crowsnest at Coleman, narrowing and deepening a previously disturbed



Studies of mule deer in the area of the dam and reservoir reveal that populations have actually increased since the beginning of the project. Although biodiversity is a primary goal of the mitigation program, deer are considered an indicator species. As they adapt to the new habitat being developed in the area, it is expected that deer, mice, coyotes, ruffed grouse and warblers will also find the new home to their liking.

channel to make it more to the liking of trout and other species. Similar projects were begun in 1991 on the Castle and the north fork of the Oldman, both higher flow rivers than the Crowsnest. A pilot project was also undertaken to enhance habitat for brown trout in the Oldman River downstream of the reservoir. This project near Monarch saw boulders strategically placed to provide in-stream cover for trout.

According to Englert, the results of a 1990 angler survey indicated that the majority of anglers were satisfied with the enhancement works. Their assessment? The new habitat areas were fishable, had an acceptable appearance and provided a good catch of legal-sized trout.

Calgary environmental consultant Dr. Ron Wallace, who helped develop the fisheries mitigation strategy, calls it “an extremely ambitious effort with a lot of biology and engineering input.” Given the stature of the trout fishery disturbed by the dam, it was “hugely important” that such a program be undertaken, he says, “Certainly nothing of this magnitude has been done in Alberta.”

While the experts hoped to see self-sustaining populations of trout develop in the newly dependable flows downstream of the dam, they were not so hopeful about the reservoir. In spring 1992, John Englert observed, “We don’t really expect to see a significant fishery in the reservoir, but



While every dollar spent on the Oldman River Dam and reservoir is projected to return economic benefits of \$2.17, it is difficult to quantify the value of this smile. According to Public Works, Supply and Services Minister Ken Kowalski, none of the pluses related to increased recreation and tourism have been factored into the benefit/cost ratio.

we will continue monitoring conditions there to see if sport-fish populations develop naturally or if possibilities for stocking emerge.”

The people involved with fisheries mitigation are encouraged by early results of their efforts, says Englert. Still, they view mitigation as a long-term proposition. As a result, government has made a commitment to monitor and evaluate the multi-million dollar program, with implementation continuing until at least 1996.

On the wildlife side, the goal was to minimize the impact of the dam and reservoir on area wildlife by protecting and enhancing natural habitat and creating new habitat. The program began with some twenty-five hundred acres set aside specifically for wildlife mitigation purposes and with the more than one hundred twenty kilometres of fencing that protects it. Native grasses have been reseeded, approximately two hundred and fifty thousand trees native to the valley have been planted and sixty dams have been built in coulees near the reservoir. These are used both to create wetland habitat and to sustain nearby trees and shrubs. Nesting platforms for raptors and nesting boxes for American kestrels surround the reservoir and nesting sites for Canada geese on high ground will emerge on private islands as the reservoir fills. Al Nilson, who manages the wildlife mitigation program for Alberta Public Works, Supply and Services said in early 1992 that such

Journey into the past

The Historical Resources Division of Alberta Culture and Multiculturalism played a leading role in the evaluation and mitigation of historical resources at the Oldman River Dam site. All mitigation work was subject to approval by the department.

Brian Ronaghan, the department's eastern slopes archaeologist, says that although a considerable number of resources would be inundated, sites as exceptional as Head-Smashed-In Buffalo Jump are not present. Individually and together, however, the Oldman River Dam sites were of sufficient value to require an extraordinarily extensive program of scientific information recovery before the project could be allowed to proceed. "Prior to the Historical Resources Impact Assessment, forty-five prehistoric sites were known. As a result of that work, 314 additional sites were identified, of which 170 were in the reservoir."

Dr. Jack Ives, director of the Archaeology Survey of Alberta told a 1988 Oldman River Dam forum at the University of Lethbridge: "If it is regrettable that historical resources will be lost through the construction of the Oldman River Dam, we would also do well to remember that there are some conspicuous advantages to proceeding with the mitigation plan we have outlined for the next two years. We can recover information now that will help us to learn about the prehistoric and historic past. Such research quite conceivably might not have taken place for literally decades. Increased knowledge and appreciation of the prehistory of this part of the province can offset effects of the project while providing valuable information for sound historical resource management in the future"



Archaeologists examine bone beds near the Oldman River Dam site.



A rock-ringed hearth adds another dimension to the story of early area residents.

efforts had already produced some pleasant surprises: “When we initially surveyed mule deer populations in the area, we found a summer population of about two hundred and a winter population of three hundred fifty. Our recent counts showed the winter population at about six hundred.” With the reservoir expected to fill to capacity later in the year, he projected a short-term drop in deer populations. “But we expect the numbers to gradually increase as new habitat develops,” he adds.

The valley is home to hundreds of species of birds and animals. Although the habitat is designed to suit certain indicator species, these same habitats that attract mule deer, for example, will also appeal to deer, mice, coyotes, ruffed grouse and warblers. Similarly, the presence of mallards suggests the site is also alive with wood frogs, Canada geese, coots and plains garter snakes.

Prairie falcons have indicated their approval of goings-on at the reservoir by continuing to occupy the cliff-side homes in the area. Even when the reservoir is filled, the forty-odd new nesting cavities created by the mitigation team are expected to keep falcon populations high. While geese and ducks were expected to be attracted to the reservoir (“We didn’t do anything — they just came because of the water,” says Nilson), cormorants, loons and pelicans have also taken up residence. “A pair of golden eagles has been



Dozens of professional and amateur-volunteer archaeologists and historians were involved in the historical resources mitigation program. During an analysis of bones taken from the Oldman River Dam site, William Tidy (left), lab assistant with Ethos Consultants Limited, confers with John Brumley, of Medicine Hat, archaeology program manager for the project.

Historic and prehistoric artifacts, including house foundations, tipi rings and bone beds can be viewed from a different perspective by those with a yen for underwater adventure. The Alberta Underwater Archaeology Society brought an interesting twist to the mitigation program by helping to preserve and protect underwater sites. The project was aimed partly at the enjoyment of divers and partly at determining the effect of flooding on historic artifacts.

Society President Richard Nesby explained that while some sites would be available to sports divers, others would only be accessible to professional divers. Ultimately, an underwater archaeological trail will be developed. "It's the most exciting project our society has ever been involved with," he says.

using the area for hunting, and we hope they will eventually nest here," Nilson says.

People who live close to the reservoir had already encountered the newcomers by the summer of 1991. "We've seen pelicans — birds that were never seen in this area before," commented Betty Mensaghi. Anne Connellan was delighted to see Canada geese and ducks on the small dugout near their reservoir-area home. "In fact," she says, "we have seen more animals and birds this year than we have in the fifteen years we've lived here. People say they are simply coming up out of the river valley as it floods, but I'm not so sure that's true. A big body of water is a major attraction to wildlife."

In late 1991, Public Works, Supply and Services Minister Ken Kowalski reconfirmed that assessments of vegetation, wildlife distribution, habitat use and habitat projects would continue once the project was completed. Work would continue according to guidelines developed in co-operation with the Local Advisory Committee and in conjunction with the full-time biologist stationed at the dam to oversee long-term monitoring programs.

Kowalski describes government's attitude toward mitigation programs at the Oldman River Dam site, "The overall direction was that we should not spare any money or energy in making sure we did everything possible in terms of mitigation. It was just a blanket policy."

The Cottonwood Story

The ubiquitous cottonwood tree that gives its name to this park near the Oldman River Dam is a pleasant sight throughout southern Alberta river valleys. Recognizing their value to the ecosystem, the Alberta government has been studying the region's cottonwood forests for a decade, searching for ways to preserve these historic poplars downstream from the Oldman River Dam.

"These river valley forests are especially valuable in southern Alberta because we have no trees elsewhere," says University of Lethbridge scientist Dr. Stewart Rood, who has played a key role in cottonwood research as a consultant to Alberta Public Works, Supply and Services. "They provide dramatic contrast to the treeless prairies; they are centres of environmental activity, rich in wildlife and birds; and they provide a canopy over a distinctive understory of plants."

Public concern for the fate of the Oldman River cottonwoods arose from experience with other dams, notably the St. Mary River Dam, Rood noted. He himself once shared that concern: "Research showed that downstream from the St. Mary Dam, the cottonwoods were largely decrepit or dead, while, in contrast, forests upstream of the dam were still thriving."

In fact, he added, the reasons turn out to be somewhat more complex than simply the presence of the dam. To survive, the cottonwoods require periodic spring flooding to establish a seed bed and adequate summer flows to prevent drought stress. On the St. Mary River, an abrupt end to spring floods, low summer flows and heavy water demand have combined to limit moisture for the trees during the hottest season, causing many to die. "The downstream forests were naturally sparse and the slight additional stress of the dam proved lethal."

The outlook for the Oldman River forests is considerably brighter. Working with five research groups throughout North America, all studying the ecological and physiological impact of dams on downstream forests, Rood and his research team have concluded that effective strategies exist to protect the trees.



"Whether we can save all of the cottonwoods along the Oldman River is uncertain, but we're convinced we can reduce the damage by informed operation of the dam."

Observing that more sophisticated environmental planning now goes into massive water-management projects than was the case four decades ago when the St. Mary Dam was built, Rood predicted this would help preserve the cottonwoods. "It was only recently recognized, for example, that a gradual decline in water levels is needed after spring floods to maintain the health of cottonwood forests. The pattern of flow must be adjusted to ensure flows gradually taper off during the summer, allowing new seedlings to maintain contact with the declining moisture."

In order to protect downstream forests, they have to be studied carefully before and after dam construction, he said. Pre-dam forest inventories have already told researchers what trees are growing where in the Oldman River valley. Post-dam monitoring will reveal whether or not the dam's operating plan provides the conditions required to ensure survival of the cottonwoods. Adjustments in the plan can then be made accordingly, says Rood, "I believe we can have both economic prosperity and environment preservation – but only through negotiation and very careful planning."



EIGHT

The Future and the Oldman River Dam



Throughout the two-decade-long process of planning, designing and building the Oldman River Dam, Alberta underwent a dramatic transformation. The population grew by 56 per cent — from 1.6 million in 1971 to 2.5 million in 1990. An increasingly industrialized economy more than doubled in size. And gradually the province's foundation industries of energy and agriculture were bolstered by increasing activity in sectors ranging from forestry and food processing to advanced technology and tourism.

All of these developments have marked the province's steady progress toward a future in which quality of life and economic success remain the important goals. Increasingly, these goals will be achieved against a background of environmental concern and determined efforts to achieve sustainable development. In southern Alberta, water is — and will continue to be — at the heart of this picture. Just as environmentally sound forestry and energy development will be the touchstone for growth in the northern part of the province, sound water-management strategies will determine the future for the south.

In the Oldman River Dam, southern Alberta has taken a gigantic step toward that future. Not only does an assured flow in the Oldman River guarantee that domestic, municipal, industrial and agricultural water needs can now be met throughout the Oldman River basin, it also allows Alberta to continue meeting its water apportionment obligations to provinces downstream.



Checklist for dam safety and performance

With the completion of the project, responsibility for the Oldman River Dam and related works reverted to Alberta Environment. When Operations Manager Denis Magowan now tours the site, he counts on more than his eyes and ears to determine the state of the dam and related works. Throughout the site, dozens of sensitive instruments continuously monitor the condition and performance of all elements of the project.

For several months following completion of construction, prime consultants UMA Engineering would also continue to monitor instruments that measure everything from water pressure against the dam to seepage through the dam to the slightest movement in any element of the structure. "Everything moves a little bit; nothing is perfectly stable," said UMA Project Manager Don Phelps. "We are monitoring movement against predetermined criteria."

By extending irrigation to another one hundred and seventy thousand acres, Albertans will enhance their substantial reputation as reliable global suppliers of agricultural products. At the same time, food processing, already Alberta's largest manufacturing sector with more than four billion dollars in annual shipments, is expected to expand further as newly irrigated lands begin supplying the grains, vegetables and specialty crops needed to feed modern food-processing plants.

Throughout the river valley, an assured supply of quality water will not only contribute to the greening of communities along the Oldman River, it is also expected to improve fish habitat and enhance summer fun for canoeists and kayakers. At the Oldman River Dam site, southern Alberta residents will join tourists in exploring novel opportunities for scuba diving, sailing and windsurfing. New camping and picnicking sites have emerged and, with the end of construction and creation of a large, new water body, deer, waterfowl and other wildlife abound in the area. Located close to major tourist draws such as Head-Smashed-In Buffalo Jump, Waterton Lakes, Frank Slide and the newly completed Remington Carriage Museum in Cardston, the Oldman River Dam will almost certainly play an expanded role in an Alberta tourism industry that currently funnels more than two and a half billion dollars annually into the economy.

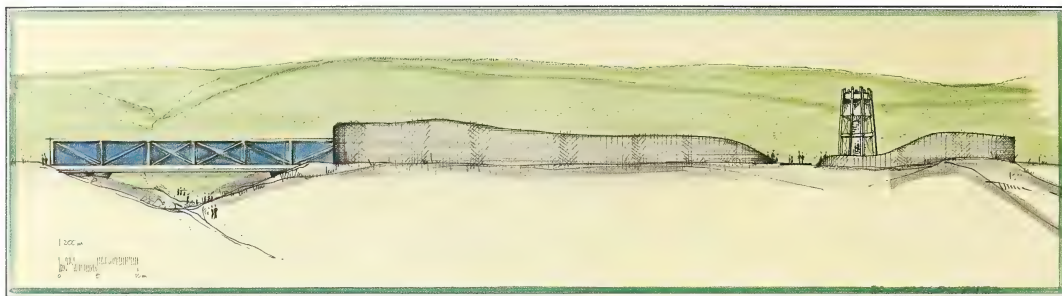
Above the dam, the sections of cherished trout fishing spots lost to the reservoir are being re-created in other areas of the Crowsnest, Castle and Oldman rivers by experts in fisheries mitigation — and an ongoing monitoring program is designed to ensure Alberta fulfills its commitment to no net loss of recreational fishing opportunities as a result of the dam. Similar monitoring programs will make sure that mitigation work with wildlife habitat and animal and bird populations produces the desired results.

The centrepiece of the Oldman River Dam site will be the interpretive centre, called WaterWorks. It will be launched under a unique government and private-sector initiative involving Alberta Public Works, Supply and Services and a volunteer-based organization, the Southern Alberta Water Science Society. Plans for the centre as a self-supporting facility reflect the optimism of area residents about the tourism potential of the dam and reservoir area. With an eye on the Hoover Dam, a durable tourist attraction in the Nevada desert, they ask, “Why not here?”

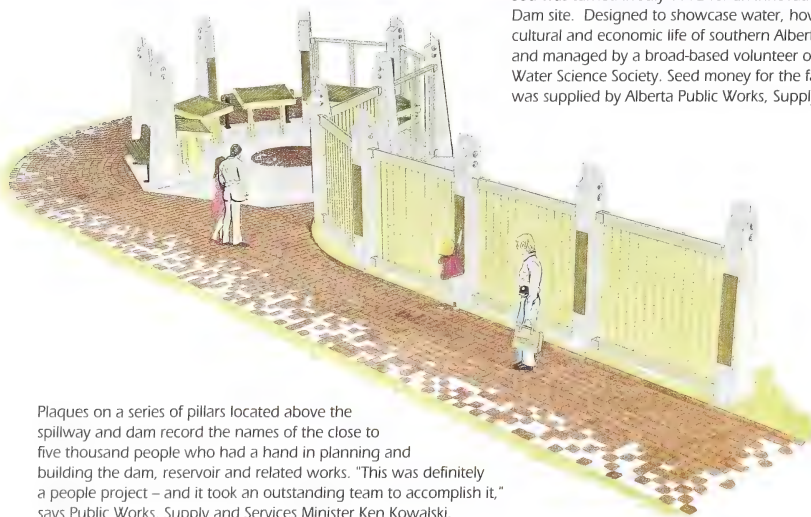
Designed around the theme of water, the centre will use innovative displays and interpretive programming to explain the importance of water and how it can be preserved and managed in order to benefit all forms of life. The complex will also function as the orientation centre for



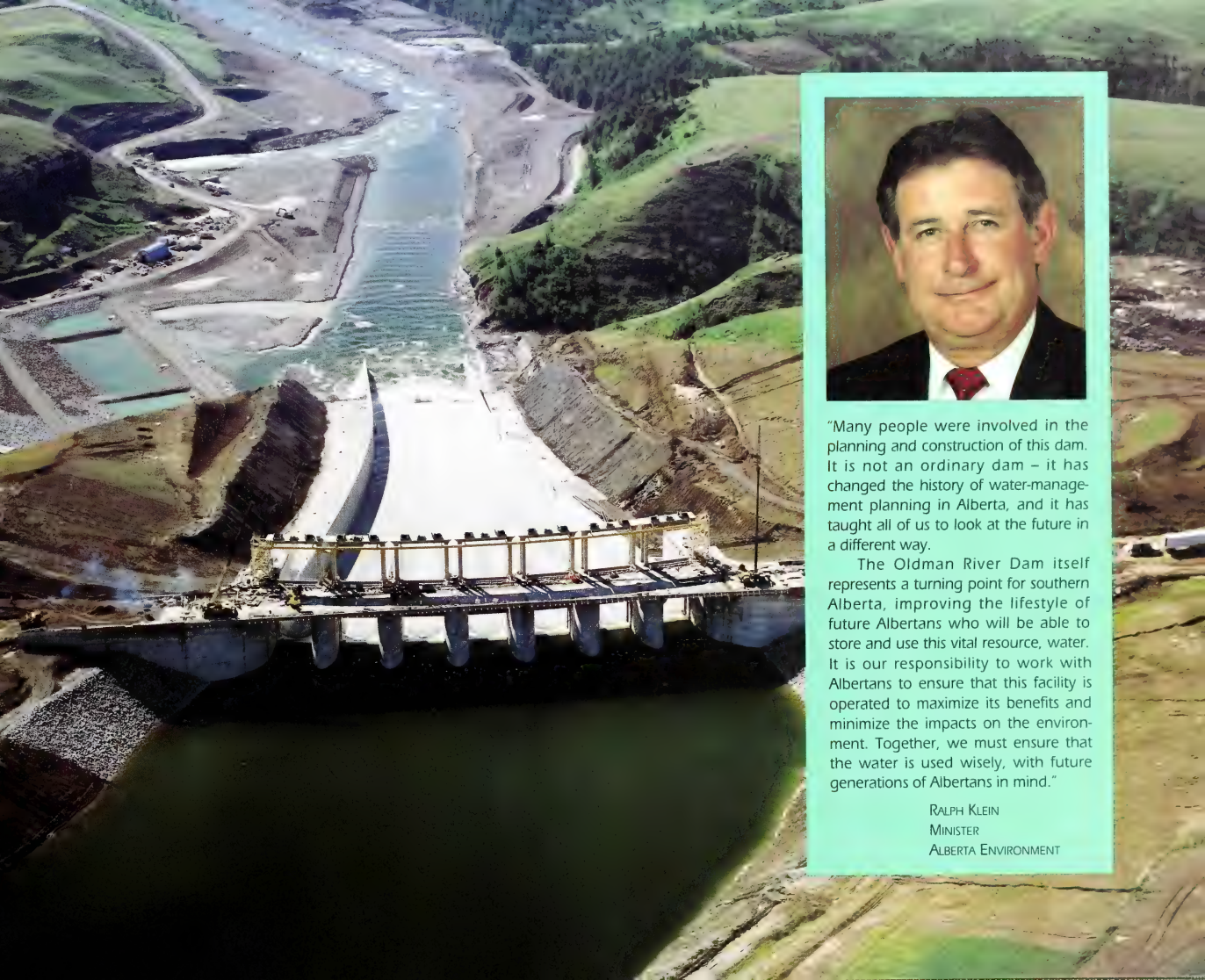
The Oldman River Dam would not be the only project to add a boost to the area's economy in the early 1990s. Several renewable energy projects in the Pincher Creek, Cowley and Waterton areas harness the power of the region's abundance of sunshine and westerly winds. For example, the Alberta government's three-million-dollar South Western Alberta Renewable Energy Initiative demonstrates the commercial potential of wind and solar power, both practical and environmentally friendly energy sources.



Sod was turned in July 1992 for an innovative interpretive centre at the Oldman River Dam site. Designed to showcase water, how it works and what it has meant to the cultural and economic life of southern Alberta, the centre will be funded, established and managed by a broad-based volunteer organization called the Southern Alberta Water Science Society. Seed money for the facility, appropriately named WaterWorks, was supplied by Alberta Public Works, Supply and Services.



Plaques on a series of pillars located above the spillway and dam record the names of the close to five thousand people who had a hand in planning and building the dam, reservoir and related works. "This was definitely a people project – and it took an outstanding team to accomplish it," says Public Works, Supply and Services Minister Ken Kowalski.



"Many people were involved in the planning and construction of this dam. It is not an ordinary dam – it has changed the history of water-management planning in Alberta, and it has taught all of us to look at the future in a different way.

The Oldman River Dam itself represents a turning point for southern Alberta, improving the lifestyle of future Albertans who will be able to store and use this vital resource, water. It is our responsibility to work with Albertans to ensure that this facility is operated to maximize its benefits and minimize the impacts on the environment. Together, we must ensure that the water is used wisely, with future generations of Albertans in mind."

RALPH KLEIN
MINISTER
ALBERTA ENVIRONMENT



Travellers across southern Alberta are not likely in future to encounter scenes such as this, near Monarch. Chronic low flows in the Oldman River during late summer affected both the quality and quantity of water available for municipal and domestic use. The presence of the Oldman River Dam means area residents can now depend on a stable supply of quality water.



City parkland as well as rural fields surrounding Lethbridge will continue to benefit from regulated flows in the Oldman River.

At the Nikka Yuko Gardens in Lethbridge, water is the key that transforms semi-arid landscape into green and fertile glades.



"I remember being at a news conference in the early part of 1986, where I said to the media that this was going to be a very controversial project. It turned out to be very much so – with lots of ups and downs. Still, we had a mandate to build a dam to benefit all of southern Alberta. And that dam is now a reality! I believe more dams will be built in Alberta – but I cannot see demand in the near-term for another project of this magnitude."

Ken Kowalski
Minister of Public Works,
Supply and Services

other area attractions, including the world-class kayak run below the dam and the nearby Heritage Acres exhibit of antique farm equipment.

According to Public Works minister Ken Kowalski, the benefits associated with these new tourism and recreation opportunities were not factored into government's original cost/benefit analysis, which showed that every dollar invested would generate \$2.17 worth of economic activity: "If anything, I now think we underestimated the benefits. We did not build into that analysis the recreation enhancement, the tourism enhancement and some other intangibles which can be changed into tangibles. We now believe the benefits will be even greater than first anticipated."

On a social level, the minister believes the dam delivers a clear message to all southern Albertans that they are an important part of Alberta:

Despite all of the controversy associated with the project, they now feel very much a part of the engine for economic development and growth in this province. Water is the thing that gives them that right, that opportunity. By having a constant water supply, some fifty communities now have a chance for a future. They don't see a finite limit to the expansion or growth of their towns. They can now look ahead forever. As long as there is a sun and as long as there is moisture, they will have a chance. Once that first important bit of infrastructure is in place, they can use their own imaginations to do whatever it is they want to do.

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